MAGAZINE

OF

ZOOLOGY AND BOTANY.

ORIGINAL COMMUNICATIONS.

I.—*The Fauna of Twizell.* By P. J. Selby, Esq. (Continued from Vol. i. p. 424.)

From the circumscribed extent, as well as the natural features of the district described, the list of birds is necessarily very limited in species belonging to the Grallatorial and Natatorial orders, but contains a fair ordinary average of Insessorial as well as Rapacious and Gallinaceous birds. In front stands the great sea eagle, (H. albicilla,) as I have twice had the gratification of seeing this noble bird wing its way across the district on its route from the coast to the interior. Scarcely a winter indeed passes without one or more individuals being seen in some part of the county; and during one season three of these birds almost daily frequented Chillingham Park, the seat of the Earl of Tankerville, where they were observed to prey upon the fallen deer. These visitors, it may be observed, are generally immature birds; but as no eyrie at present exists, either in Northumberland or in the south of Scotland, they are probably the offspring of some of those pairs which are yet to be seen in the northern districts and islands of Scotland, and which, in defiance of the assiduity and daring of the shepherd and Highland fox-hunter, continue at times to rear their young in some precipitous and inaccessible rock, or else upon the islets of its little frequented lochs. These, when able to provide for themselves, are driven from the place of their nativity by their parents, who allow of no compeer within their peculiar beat, and in their search of a domain of their own pay us these passing visits. The peregrine

falcon is still occasionally seen, but its appearance is now rarer than it used to be a few years ago. This may be attributed to the destruction of two or three eyries in the adjacent districts, one of which was placed in the remains of the tower at Dunstanborough Castle, and another in a craggy precipice upon a moor, about three miles to the south-west of Twizell. Eyries, however, of this falcon still exist in some of the precipitous gullies of the Cheviot range, and in the lofty rocks of the magnificent promontory of St Abbs Head. The merlin breeds, but sparingly upon the neighbouring moors; and for three or four successive seasons a pair had their nest within a stone's throw of our little district. The increase of sheep stock, and extended cultivation, is annually tending to diminish the numbers of this, as well as many other birds which formerly used to abound.

The kestril, as well as the sparrow-hawk, annually breeds with us, the former in a crag in the Dean, or else in the old nest of a carrion crow; the latter is always its own architect, though it does not excel in the art, as the nest is a large flat fabric, loosely constructed of twigs and sticks, with a very trifling central depression. The sparrow-hawk has frequently as many as six young ones, and the havock they make at this time among the smaller birds and young game is almost beyond belief. I recollect inspecting a nest in which lay the recent remains of a lapwing, a blackbird, a thrush, and two green-linnets, some half devoured, and others nearly whole, but all neatly and cleanly plucked. The common as well as the rough-legged buzzard are only occasional visitants, and the first is perhaps of even rarer occurrence than the latter, but neither species has been seen for the last two years. The honey-buzzard (Per. apivorus,) certainly one of the rarest of our Falconidæ, figures in the list; as a fine specimen of the adult male is now in my possession, taken within the precincts of the district in September 1835, by means of a trap baited with wasp's comb, a nest of which insect it had previously been observed to have scratched out from the root of a tree. Within the last five or six years several honey-buzzards have visited Northumberland and Durham. Of those that have been secured, three or four which I have seen are in what is now considered the immature plumage of the male, in which state the greater part of the head and neck is white, the breast and belly with dark-brown lanceolate streaks.* In those

* For a more detailed account of the honey-buzzard in this state, our readers are referred to the first number of the "Illustrations of Ornithology," New Series, and the Transactions of the Berwickshire Naturalists' Club.

that I have dissected nothing but the remains of wasps in various stages were detected. The moor-harrier is rapidly declining in numbers, many of the marshes in which they used to breed having been drained and reclaimed. Some few years ago I recollect it as one of the most abundant species in this neighbourhood ; now an individual is rarely to be seen. Of the owls, the long-eared (Otus vulgaris) is the most plentiful, and is met with in all the plantations where the fir, particularly of the spruce kind, abounds. They breed early, and have generally eggs by the middle of March. An old nest, either of the magpie or carrion crow, is the situation invariably selected as the place of deposit. The young continue to be fed by their parents long after they have quitted the nest ; and their querulous cry, which commences immediately after sunset, is heard throughout the greatest part of the summer. The tawny owl is now rarely seen. I may here mention, that a very small owl, probably *Nyctipetes nudipes* or *Tengmalmi*, Swain. was seen near the stables at Twizell by a person well acquainted with birds, and who could scarcely mistake an owl of such small dimensions for any of the common species, particularly as he was within a very short distance, and had an opportunity of examining it before it flew from its perch. The cinereous shrike, (Lan. excubitor,) is the only species, I believe, that has yet been detected north of the Tyne. At Twizell I have killed two or three individuals, and have seen various other specimens from the adjoining districts. Its time of appearance is between the months of November and March. Two specimens, both adults, of the pied flycatcher (Mus. luctuosa) have been killed within our confines, and another was seen but allowed to escape. They all appeared in May ; but no instance of its breeding either here, or within the county, has yet come to my knowledge. Of the various thrushes, it may be remarked, that the missel, (Mer. viscivora,) has of late years been rapidly on the increase in the north of England and Scotland. I well remember when it was considered a very rare bird. Now it is met with in all directions and at all seasons, as it has not been observed to migrate even during the severe winter months. This, however, the common thrush usually does to a certain extent, as it regularly moves from the interior to the sea coast towards the middle of November, and there continues till January is pretty far advanced. The ring-ouzel (Mer. torquata) pays us a passing visit on commencing its autumnal migration, but rarely remains more than a few days, during which it is generally seen in the neighbourhood of the mountain-ash trees, whose berries are a favourite repast of this as of all the other

thrushes. Fieldfares frequently remain here till May is far advanced, a fact which long surprised me, as most of the species which remain with us have ere then reared a full fledged brood. Mr Hewitson, however, in his beautiful work on British Oology, satisfactorily accounts for so late an appearance, as he informs us from actual observation that they do not commence nidification in Norway, one of their breeding-stations, before the end of May; and further, that they differ from all their congeners in the remarkable fact of breeding, like the rook, in large societies. The dipper (Cin. aquaticus,) that lively attendant on our mountain streams, and whose sweet and early carol enlivens the solitary situations it frequents, breeds annually in Twizell Dean. The situation selected is the face of a rock or craggy steep overhanging the water, and frequently in a spot where it might be expected to be always saturated with wet from the dripping of the rock above, yet so compact and well framed is the dome of the nest, that it shoots off like a penthouse all superabundant moisture, and the eggs and young remain dry and warm in their mossy and leaf-lined receptacle. When the nest contains young, it is easily detected by their loud chirping as often as the old birds fly past or approach the nest with food. On quitting the nest, after feeding the young, the old birds frequently drop into the water, dive, and rise at some distance, when they take wing. I have before stated my opinion, that the dipper does not walk at the bottom of the water when submerged,—a power confidently attributed to it by various writers,—but uses the same exertion in this act as other diving birds. This opinion is confirmed by repeated observations, extending through a course of many years, during which I have watched its habits with particular attention, and oft when the bird has been close to me, though unaware of my near propinquity. The young, even before they leave the nest of their own accord, if disturbed and made to quit it, dive instinctively the moment they touch the water, but their progress beneath the surface, which I have frequently seen extended to six or eight yards, is always by the peculiar motion of the wings, made use of by other diving birds, and never by walking at the bottom,—a feat they ought to perform in common with their parents if given to them, like the usual mode of diving, as a natural or instinctive habit. I may also state that their internal anatomy presents nothing peculiar, or that could give one reason to suppose that they were likely to possess so extraordinary a power. Of the genus Salicaria, the sedge warbler (Sal. phragmitis) is still frequent upon the margins of the brooks and moist bushy situations; but the grasshopper

warbler (Sal. locustella,) which, during the early growth of many of the plantations, then abounding in whin, broom, and other undergrowth, might be heard in various directions, pouring forth its sibilous note, now that they have attained a considerable growth, is rarely heard, and then only in the brushwood adjoining the moor and other open ground. The white throat (Cur. cinerea) is plentiful; but no example of the lesser species (Cur. garrula) has yet been detected. Of the greater pettychaps (Cur. hortensis) the number is limited; but its congener, the black-cap (Cur. atricapilla) is abundant. Of the Sylviæ or willow wrens, the hippolais of Lath. &c. the rufa of Temminck, is, comparatively speaking, a rare bird, and seldom more than three or four pairs annually visit the district, which are always confined to peculiar spots or localities. The S. sibilatrix or wood wren is plentiful in the woods of older growth, particularly where beech and oak abound. The S. trochilus is, however, the most abundant of all our summer visitors. This species and the black-cap arrive about the same time, and the period, from the observations of many years, is between the 14th and 18th of April; Mr Hewitson's work renders it almost unnecessary to add, that the nest of *S. sibilatrix* is easily distinguished from that of *S. trochilus*, by having a lining of hair instead of feathers. The diminutive but active little gold-crest (R. auricapillus) is very plentiful, and may be seen at all seasons in the plantations, delighting especially in the thick masses of the spruce and silver firs, among which it finds a constant supply of food, as well as a favourite site for its nest, which, as a semipendulous structure, yields in neatness and elegance of fabrication to none with which I am acquainted. In addition to our constant residents, we receive a great accession of strangers about the end of October and beginning of November from the colder regions of Norway, Sweden, &c. The pied wagtail (Mot. alba) migrates in autumn, but returns at an early period of the year, as I have frequently noticed it on the roof of the house during the last week of February, when the weather was mild. The majority of the grey species (Mot. boarula) also leave us during winter, a few individuals only remaining, which are occasionally seen in warm situations near spring heads and other water courses that remain open even during severe frosts. This species prefers the ledge of a rock upon the banks of our limpid rivulets for the site of its nest. It breeds very early, and the first brood has generally quitted the nest before the middle of May. The yellow wagtail is never seen in this district, though far from uncommon upon the dry hilly grounds a few miles to the westward. The Anthus arboreus,

tree pipit, breeds annually upon the lawn, and though its song does not possess great compass or variety, its mode of delivering it as it descends, with motionless expanded wing and outspread tail, from the elevated station it has previously attained by a flight as peculiar, makes it a general favourite. Its arrival does not take place till the last few days in April or the first of May. That lovely bird the wax-wing (Bombycilla garrula) has been twice or thrice seen within the district. It is uncertain in its appearance, and sometimes many years elapse without a visit. During the winters of 1835 and 1836 it was generally spread over the kingdom, and I saw many specimens taken in the neighbourhood. I may here mention, that a living individual was given to Dr Johnston of Berwick, who kept it caged for several months. It soon became tame and familiarized to its situation, and recognized those who fed and attended it. It was frequently allowed to come out of the cage and fly about the room, and at last made its escape, from the door of the cage having inadvertently been left open opposite to an open window. It was fed at first upon haws and holly berries, and when these failed, seemed to thrive upon dried fruits, such as raisins, currants, figs, &c.

The bunting (Emb. miliaria) visits the district in small flocks during the winter, but few breed with us, as it affects a more open and perhaps a less cultivated country, and I have observed it to be more abundant where meadows and pasture prevail. Flocks of snow-flakes (Plect. nivalis) occasionally frequent the stubbles during the winter months; none, however, have appeared this last winter although it has been long and severe, nor have I noticed them in the adjoining districts. The lesser redpole (Linaria minor) breeds in all the deans and copses wherever the birch abounds. Small flocks are now and then seen during the winter, but the great body seems to migrate further south. In April they return in flocks, and for some time frequent the Wych elms, whose seed, which at that time is beginning to ripen, they greedily devour. They do not nidificate before May, or till they can procure in sufficient plenty the downy pappus of the willow, with which soft substance they chiefly line their nests. I have observed the siskin, (Car. spinus) to be much more plentiful in mild than in severe winters; it is therefore probable that when the latter prevail they migrate to a lower or warmer latitude. They are generally seen upon the birch and alder trees, extracting the seed from the catkins, which they effect in a quick and adroit manner. When feeding, this bird assumes, like the lesser redpole, a variety of interesting attitudes, in order to reach the catkins. Its feet possess the true perching or insessorial form, and

it is never seen upon the ground. The bullfinch (Pyrr. vulgaris,) beautiful and ornamental as it is to the plantations, is the only species whose numbers I wish to see diminished, being a true *gemmivorous* bird, and when abundant, frequently making sad havock in the orchard and garden, as soon as the buds begin to swell in spring. It attacks the plum trees, gooseberries, medlars, certain varieties of the apple and the thorn, and I have known two individuals in the course of a couple of days denude a large plum tree of almost every bud. Last spring two or three attacked a large medlar upon the lawn, which they found so much to their taste that they never quitted it till they had stripped it bare, and this they effected in a few days. I may remark, that in the stomachs of a very great number opened at various times, nothing but the triturated remains of the embryo leaves and flowers could be detected, In winter they affect the young plantations and birch woods, and I have observed that they often feed upon the embryo shoots of the Scotch fir, as well as the buds of the larch. The crossbill (Lox. curvirostra) is well known as an occasional visitant. During the winter and spring of 1836, they were particularly abundant throughout the island, and whether from the ample supplies of food, or something peculiar in the season, they remained in the north to a period much later than I had ever before known them. On their former visits they have generally quitted us before Christmas, and this I considered to be in accordance with Temminck's statement as to the period of their breeding, for he remarks in his Manual, *niche en hiver,* but on their last visit they were seen in considerable numbers during March and April, and I continued to take specimens up to the 2d of May, on which day a male and female, evidently paired, were procured. On dissecting the female, eggs as large as a pea were found in the ovaries, the male also for the first time was heard to utter his love note, a fine clear whistle (very unlike their usual call,) while perched on the tree with his mate. Another pair was seen as late as the 16th of May. From these facts, it appears that the species do not always breed at the time mentioned by Temminck. Its nest hitherto has not been detected in Britain, but it seems probable that on such occasions as we have mentioned it may nidificate in the extensive pine woods of Scotland.

Of the Corvidæ, the raven (C. corax) is now only seen occasionally, but in former days it bred in Twizell Dean, where the Corbies' Crag still points out the situation of the nest. The carrion crow (C. corone,) though persecuted to the death as the great destroyer of the eggs and young of game, is yet too plentiful. From the obser-

vations and experiments I have made, this wary bird appears to rely much more on its acute vision than its sense of smell, to detect approaching danger and avoid surprise, and I am certainly not among those who believe in its nice discrimination of the fatal effects of gunpowder, the scent of which it is supposed to perceive at many gunshots distance. The beautiful and active jay is rare, and it is only now and then that its harsh and grating scream is heard in the plantations. The great spotted woodpecker (P. major) is the only species I have hitherto observed, and most of the instances have been in autumn, during the period of the equatorial migration. The common creeper (Certhia familiaris) is seen in all the plantations. A pair of these interesting birds bred for some years in a hole in the wooden back of a summer-house, where the female, when sitting, almost allowed herself to be handled without quitting her charge.

Of the fissirostral tribe, the kingsfisher is a rare visitant, and it is only at distant intervals that it enriches the margin of the burn with its brilliant plumage. The chimney swallow (Hir. rustica) is the only species that breeds with us in any number, for though the martlet (Hir. urbica) used formerly to infest the corners of almost every window, and had besides a long row of nests under the eaves of the stables, they have for some years past entirely deserted the place, and it is only in autumn, when congregating previous to migration, that they are seen. I attribute this desertion in part to the growth and great extent of the plantations, for the natural situation or habitat of the species appears to be a naked open country; thus they are found breeding in vast numbers in many of the rocky cliffs upon the sea coast, and under the eaves of houses upon extensive moors; and in Sutherland we found the face of the marble cliffs near Inch-an-Damff, thickly beset with their clay built receptacles. The night-jar (Cap. Europæus,) though never numerous, is far from being rare; several pairs breed annually within our precincts. Its peculiar humming note, the invitation of the male, is seldom heard before the latter end of May or beginning of June. This late arrival of the species is in beautiful accordance with the appearance of those hosts of insects, which furnish it an abundant supply of food, viz. the nocturnal Lepidoptera, and some of the large night-flying Coleoptera. When perched, the night-jar always sits lengthways upon the branch, with its head low, and from its assimilating colours, is with difficulty detected in that situation.

The ring pigeon or cushat (Colum. palumbus) is the only species we can boast of, but of it the number is very great, and seems annual-

ly increasing, which may be attributed to the shelter and security it finds in the plantations as nurseries for its young.

Among the Grallatores may be noticed the green sandpiper, (Totanus ochropus) a bird of rare occurrence in all parts of the kingdom. Its congener (T. hypoleucos) breeds upon the margins of the rivulet, and from its lively manners and elegant flight, proves an interesting addition to the Fauna. The golden Plover (Charadrius pluvialis) visits the fallows during autumn and winter in large flocks; in spring they disperse and retire to breed upon the adjoining moors, at which time they assume the livery of the *C. apricarius* of authors, the white of the under parts giving place to a deep black. To obtain the eggs, the birds must be watched at a distance, as the female, upon the approach of any intruder, at the warning note of the male, immediately skulks off from the nest, and only shows herself, when she has got to a considerable distance from it. The dottrel (Ch. morinellus) we see only during its migration northwards in May, and then but occasionally, as the great resting point of the flocks which pass by this route, is further to the north, in the neighbourhood of Berwick. The wild goose sometimes in spring alights upon our new sown fields, but the usual feeding grounds of the species are all at a considerable distance, and these they have been known to haunt from time immemorial. The wild duck (Anas boschas) frequently breeds with us, but the old duck conducts her young as soon as hatched with all possible dispatch further down the rivulet, from whence they can have access to marshes and other ground appropriated to their habits of concealment. The common gull (Larus canus) is seen in the pastures, and plowed fields during the autumn and winter months, whenever the ground is free from snow and frost. It leaves us in April, retiring further north in order to breed, and it is succeeded by the lesser black-backed gull (Larus fuscus,) which resorts to the Farn Islands in great numbers, for the purpose of reproduction.

Of the reptiles, the blind or slow worm (Anguis fragilis) is far from uncommon in the dry and stony parts of the Deans; the adder (Pelias berus of Buonap. Vipera communis of Jenyns,) abounds in all the Deans, and other dry and warm exposures. I have been unable to detect more than one species, though a great difference of colour is observable among them, but this I find varies according to the age of the epidermis, season of the year, sex, &c. The common lizard (Lacerta agilis) is the only species I have yet had an opportunity of examining, but I think we may possibly possess the

L. stirpium, as I have at various times observed individuals of a larger size than the average one of *L. agilis*.

List of birds, &c. found and observed upon Twizell:

AVES.

FALCONIDÆ.

Haliætus albicilla, Sav.
Falco peregrinus, Gmel.
—— æsalon, Gmel.
—— tinnunculus, Linn.
Accipiter fringillarius, Ray.
Buteo vulgaris, Bechst.
—— lagopus, Flem.
Pernis apivorus, Cuv.
Circus rufus, Briss.
—— cyaneus, Flem.

STRIGIDÆ.

Otus vulgaris, Flem.
—— brachyotos, Flem.
Strix flammea, Linn.
Ulula stridula, Selb.
N. Tengmalmi?

INSESSORES.

Dentirostres.

Lanius excubitor, Linn.
Muscicapa grisola, Linn.
—— luctuosa, Temm.
Merula viscivora, Selb.
—— pilaris, Selb.
—— musica, Selb.
—— iliaca, Selb.
—— vulgaris, Selb.
Merula torquata, Selb.
Cinclus aquaticus, Bechst.
Salicaria locustella, Selb.
—— phragmitis, Selb.
Curruca atricapilla, Bechst.
—— hortensis, Bechst.
—— cinerea, Bechst.
Saxicola œnanthe, Bechst.
—— rubetra, Bechst.
—— rubicola, Bechst.
Erithaca rubecula, Swains.
Phœnicura ruticilla, Swains.
Sylvia sibilatrix, Bechst.
—— trochilus, Lath.
—— rufa, Temm.
Regulus auricapillus. Selb.
Parus major, Linn.
—— cæruleus, Linn.
—— palustris, Linn.
—— ater, Linn.
—— caudatus, Linn.
Accentor modularis, Cuv.
Motacilla alba, Linn.
—— boarula, Linn.
Anthus pratensis, Bechst.
—— arboreus, Bechst.
Bombycilla garrula, Buonap.

Conirostres.

Alauda arvensis, Linn.
Emberiza miliaria, Linn.
—— schœniclus, Linn.
—— citrinella, Linn.
Plectrophanes nivalis, Meyer.
Fringilla cœlebs, Linn.
—— montifringilla, Linn.
Passer domestica, Ray.
Linaria cannabina, Sw.
—— minor, Ray.
—— chloris, Swain.
Carduelis spinus, Steph.
—— elegans, Steph.
Pyrrhula vulgaris, Temm.
Loxia curvirostra, Linn.
Sturnus vulgaris, Linn.
Corvus corax, Linn.
—— corone, Linn.
—— cornix, Linn.
—— frugilegus, Linn.
—— monedula, Linn.
Pica melanoleuca, Vieill.
Garrulus glandarius, Flem.

SCANSORES.

Picus major, Linn.
Certhia familiaris, Linn.
Troglodytes Europæus, Selb.
Cuculus canorus, Linn.

FISSIROSTRES.

Alcedo ispida, Linn.

Hirundo rustica, Linn.
——— urbica, Linn.
——— riparia, Linn.
Cypselus apus, Flem.
Caprimulgus Europæus, Linn.

RASORES.

Columba palumbus, Linn.
Phasianus colchicus, Linn. and torquatus, Temm.
Tetrao tetrix, Linn.
Lagopus Scoticus, Selb.
Perdix cinerea, Briss.

GRALLATORES.

Ardea cinerea, Lath.
Numenius arquata, Lath.
Totanus ochropus, Temm.
——— hypoleucos, Temm.
Scolopax rusticola, Linn.
Scolopax gallinago, Linn.
——— gallinula, Linn.
Rallus aquaticus, Linn.
Crex pratensis, Bechst.
—— porzana, Selb.
Gallinula chloropus, Lath.
Vanellus cristatus, Meyer.
Charadrius pluvialis, Linn.
——— morinellus, Linn.

NATATORES.

Anser segetum, and ferus, Flem.
Anas boschas, Linn.
—— crecca, Linn.
Clangula vulgaris, Flem.
Podiceps minor, Lath.
Larus canus, Linn.
—— ridibundus, Linn.
—— fuscus, Linn.

REPTILIA.

SAURIA.

Lacertidæ.
Lacerta agilis, Flem.

OPHIDIA.

Anguidæ.
Anguis fragilis, Linn.
Serpentidæ.
Pelias berus, Buonap. Vipera communis, Jenyns.

AMPHIBIA.

Caducibranchia.
Ranidæ.
Rana temporaria, Linn.
Bufo vulgaris, Flem.
Salamandridæ.
Triton palustris, Flem.
——— aquaticus, Flem.

PISCES.

OSSEI.

Acanthopterygii.
Gasterosteus aculeatus, Linn.
Malacoptyerygii.
Abdominales.
Cyprinidæ.
Leuciscus phoxinus, Yarr.
Cobitus barbatula, Linn.
Salmonidæ.
Salmo fario, Linn.
—— eriox, Linn.
—— trutta, Linn.

II.—*A Notice, with the results, of a Botanical Expedition to Guernsey and Jersey, in July and August* 1837. By CHARLES C. BABINGTON, M. A. F. L. S., &c. (Read before the British Association at Liverpool.)

IT having been hinted to me, that a short notice of the results of my botanical examination of the islands of Guernsey and Jersey might be interesting to this Section, I have drawn up (since my arrival in Liverpool) the following slight and imperfect outline of them. Although the native plants of the Channel Islands have, for about two hundred years, been nominally included in the British Floras, yet the

islands appear to have been totally neglected by British botanists. I am not aware that there has ever been any published account of their Flora; nor do I know of more than three botanists, since the time of Ray, who have communicated to the public any information concerning them from personal observation. I refer to the papers of Mr Woods in the Companion to the Botanical Magazine, Mr Christy in the Magazine of Natural History, and Mr Trevelyan in the Supplement to English Botany. Mr Woods has recorded the plentiful occurrence of several of our rarer English plants, and has added to the list the five following, viz. *Allium sphærocephalum*, *Bromus maximus*, *Festuca sabulicola*, *Brassica cheiranthus*, and *Scirpus tenuiflorus*. Mr Christy notices only one additional species, namely, *Allium sphærocephalum;* but that having been also recorded by Mr Woods, (whose paper appeared at about the same time), it does not add to the total number of discoveries. Mr Trevelyan, I believe, gathered only one new plant, viz. *Armeria plantaginea*, but he rediscovered *Echium violaceum*, which probably had not been noticed since the time of Ray, and also *Centaurea Isnardi* and *Lagurus ovatus*. There now remains only one recorded species of those which have not been found in Britain, viz. *Juncus capitatus*, discovered by Hudson, and I believe found recently by Mr Woods.

After these preliminary observations, I will now proceed to communicate to the Section the results of my own visit to the islands during the present summer. Although my success has far exceeded my expectations, yet, as I was only able to devote four weeks to Jersey, three to Guernsey, and a single day to the little island of Herm, I have no doubt that much more remains to be done. Indeed there is not a single plant recorded for either of the islands of Alderney or Sark, both of which I was prevented from visiting by bad weather.

In Jersey I noticed about 500 species of plants, and was so fortunate as to obtain from Mr Saunders, a nurseryman there, an additional list of 200 species which had been gathered by himself, making a total number for that island of about 700 native species. In Guernsey I myself gathered about 420, and in Herm 196 species, or 725 for the three islands. No cryptogamic plants are included in these numbers except ferns.

In addition to observing numerous specimens of all those mentioned before, I was so fortunate as to find six plants, which have not as yet been recorded in our lists, viz. *Hypericum linearifolium*, *Neottia aestivalis*, *Sinapis incana* and *Mercurialis ambigua* in

Jersey; and *Arthrolobium ebracteatum* and *Atriplex rosea* in Guernsey.

It may perhaps give some slight idea of the Flora of these islands, if I now mention a few of the more common and rarer plants in them, and compare the lists with those of England.

The following are rare in England, but common in Guernsey or Jersey.

Asplenium lanceolatum.
Trichonema columnæ.
Bromus diandrus.
Cynosurus echinatus.
Cyperus longus.
Iris fœtidissimus.
Erodium moschatum.
Helianthemum guttatum.
Herniaria glabra. (the plant of Suffolk not Cornwall.)
Matthiola sinuata.
Euphorbia peplis.
Exacum filiforme.
Scilla autumnalis, and
Scrophularia scorodonia (in both the islands.)
Orobanche cœrulea and
Lotus angustissimus (in Jersey only.)
Lotus hispidus, and Polygonum maritimum (in Guernsey and Herm.)

I will now notice a few common English plants which are rare in those Islands.

Bunium flexuosum.
Cardamine pratensis.
——— hirsuta.
Lamium album.
Primula veris.
Lysimachia nummularia.
Ranunculus ficaria.
Mercurialis perennis.
Saxifraga tridactylites.

I may also mention a few common English plants which have not been noticed in the Channel Islands.

Anemone nemorosa.
Bromus asper.
Campanula, (no species of the genus.)
Hypericum hirsutum.
Listera ovata.
Betula alba.
Caltha palustris.
Habenaria chlorantha.
Helianthemum vulgare.
Juncus glaucus.
Ononis antiquorum.

I am sorry that it has not been in my power, to make a similar comparison of my list, with the Flora of the north of France;* as I am convinced that a far greater similarity would have been shown to exist between the plants of the Channel Islands, and those of that country, than appears between them and the native Flora of Britain. Would it not be far better to separate the Channel Islands from the countries included in the British Flora, since, although British by political connection, they are not so by geographical position? I suspect that their almost total neglect has been chiefly caused by their inclusion in our lists,—the French not considering them as part of their district, and the English thinking them too small or too distant from our coasts to be worthy of examination.

* In the discussion which followed the reading of this paper, Mr Forbes remarked, that the botany of Jersey was very similar to that of the adjacent coast of France.—Eds.

III.—*The Natural History of the British Entomostraca.* No. IV. By William Baird, Surgeon H. C. S. &c. (Continued from p. 144.)

In my papers in Vol. i. p. 514, and Vol. ii. p. 138, of this Magazine, I gave a history of the genera Cypris and Cythere, with a list of all the species hitherto met with in this country. The next two genera I shall notice are Daphnia and Lynceus, which vie with any yet noticed, in variety and interest of details. In Latreille's arrangement, they form the third group of his section Lophyropa, the Cladocera. In M. Edward's work they will form the first order of his legion Branchiopodes, the Cladoceres. Straus unites the Polyphemus, Daphnia, and Lynceus into one family, and calls it Daphnides.

Order, Branchiopoda.—Section, Lophyropa.
Group, Cladocera.—Genus 1. Daphnia. II. Lynceus.

1st Genus, Daphnia.

Bibliographical History.—Very great confusion exists amongst the various authors who have noticed this genus, as regards the species, and many are the errors in *synonymy* which they have committed. Indeed in this genus, as well as in the genus Cypris, very little dependence can be placed either on the descriptions or figures of many of the earlier authors. Swammerdam is the first author, we know, that has taken notice of the Daphniæ, though he mentions that they had been observed before his time by Goedart, and named by him " pous aquatiques." No mention is made by this author of any insect resembling the Daphnia, in his work on the Metamorphosis of Insects, which is the only work of his I have seen, and which Swammerdam quotes from liberally, in treating of the changes which insects undergo ; and Straus says also, that he has never been able to procure the work of Goedart, in which the notice of this insect occurs. In his " Historia Insectorum Generalis," printed at Utrecht in 1669, Swammerdam gives a pretty full description of a species of Daphnia, which is evidently, from the indifferent figure accompanying it, the *Daphnia pulex*. He calls it *Pulex arboreus* or *arborescens*, the first part of which name has been retained, and applied to this species by most authors who have written since his time. His description is not very correct in some points, for he says the beak is slender and pointed, and that it is by this sharp beak

the animal draws up its food as it were by suction, like other aquatic insects. He describes, however, the motions of the insect very well, and mentions them as being frequently quite red, or of the colour of blood. This memoir of Swammerdam is republished in his "Biblia Naturæ," where the same figures are also given.* Merrett, in his "Pinax rerum Britannicarum," &c. London, 1677, mentions these insects, or at least is said to intend them by the following short description,—"Vermes minimi rubri, aquam stagnalem colore sanguineo inficientes, unde vulgus dira portendit." Francisco Redi, in his "Osservazioni utorno agli animali viventi che si trovano negli animali viventi," Firenzi, 1684, gives three figures of a species which Muller quotes as the Pulex (his *pennata*,) but which are so very bad that it is difficult to make them out. He calls them by the vague name of "*Animaletti aquatici.*" In his "Opera" published at Napoli, 1687, he gives the same figures as in the former work, and mentions them as "Tre animaletti aquatici, che vivorno nelle acqua stagnanti, e ne' pozzi, osservati col microscopia." Bradley, in his "Philosophical Account of the Works of Nature," London 1739, gives a long description of a "wonderful insect, which had but one eye," found in the river Thames, with "a head somewhat like that of a bird," and legs "like the claws of an eagle;" the antennæ are described as "two branches, resembling the dugs of animals," and which he says "we might suppose were designed for suckling their young"! "for this insect," he adds, "is viviparous, which is contrary to other insects before-mentioned; for we did not only observe the young ones alive in the belly of the mother, but likewise saw several of them excluded from her body." The figure which he gives is equally good as his description, both of them shewing the force of imagination, for it is evident this "wonderful insect" is nothing more than the *Daphnia pulex*. Trembley, in his "Memoires pour servir à l'Histoire d'un genre de Polypes d'eau douce," 1744, takes notice of, and figures a species of Daphnia under the name of "Puceron branchu," which seems to be the favourite food of the polypes, as they devour them in great numbers. It is the Daphnia pulex, and his observations on this subject, and figures also, are quoted and copied by Adams in his "Micrographia Illustrata," published in London 1746. Linnæus in his "Systema Natura," 1744, describes the same species shortly under the name of *Monoculus pulex arborescens*, and in his "Fauna Suecica," 1746, and "Entomologia Faunæ Suecicæ,"

* Vide Leyden edition, 1737. Tome i. p. 86; Tome ii. tab. 31. fig. 1—3.

1789, he again describes it under the name of *Monoc. pulex*. Baker in his " Employment for the Microscope," 1753, describes and figures a species which is evidently the *D. pulex*. He maintains that it has two eyes, and severely handles poor Bradley for saying it has only one ; though that is about the most correct part of that author's description ! He quotes Swammerdam's memoir, and retains his name for it as expressive of its appearance and motion. Joblot, in his " Observations d'Histoire Naturelle, faites avec le Microscope," 1754, describes a species under the name of " Pou aquatique," which Muller quotes as his D. sima, but which Straus says is not so, but is his D. macrocopus. The figures which Joblot gives are very indifferent, and it is not very easy to say what species they are meant to represent. Schœffer in his Memoir " Die grünen Arm-polypen die geschwanzten und ungeschwanzten zackiger Wasserflohe," 1755, describes at great length two or three species, under the name of " Geschwantzen zackiger wasserfloh" and " Ungeschwanzten zackiger wasserfloh,"—or " water flea with a tail," and " water flea without a tail ;" and this memoir is the first in which an attempt is made to distinguish different species,—the various authors whom I have quoted above having all, with perhaps the exception of Joblot, described only one and the same. He figures two species, the D. pulex and sima, and gives a sketch only of the head of a third, which being provided with a tail, has been quoted by Muller and Straus as the D. longispina, but which is only a variety of the pulex. This memoir contains a great deal of very interesting information with regard to these insects, and having been partly translated into French by Jurine at the end of his work on the Monoculi, I shall be able to avail myself of many of its details. In his " Icones Insectorum circa Ratisboniam indigenorum," 1766, the same author figures the D. pulex, under the name of " Branchipus conchiformis primus," and in his " Elementa Entomologica," published same year, I believe, he again figures it under the name of " Branchipus conchiformis." Poda, in his " Insecta Musæi Græcensis," 1761, describes shortly the same species under Linnæus's name Mon. pulex, and Ledermuller, in his " Mikroskopischen Gemüths und Augen-ergotzung," 1763, gives an indifferent figure of a species which is easily recognizable as the same. Geoffroy, in his " Histoire abrégée des Insectes," 1764, gives a good many details of this genus generally, and describes a species under the name of " Perroquet d'eau," which Muller quotes as his *quadrangula*, but which Straus quotes, and I think more correctly, as the *D. pulex ;* and Goeze, in the " Naturforscher."

1775, describes the same species under the name which Swammerdam had given it, the "Pulex arborescens." Sulzer, in his "Abjekürzte geschichte der insecten," 1776, gives a very indifferent figure of what he calls *Mon. pulex*, but which is evidently the D. vetula. Muller, in his paper on the "Cypris," in the "Philosophical Transactions for 1771," has enumerated several species of this genus also as occurring in Norway and Denmark, but under the general name of Monoculus. In 1776, however, he established the genus Daphne in his "Zoologiæ Danicæ Prodromus," and describes eight species, only three of which had ever been noticed before his time. In his "Entomostraca," 1785, he adds one more species, gives figures of all the nine, and a lengthened description of each. He changes the generic name from Daphne to Daphnia, which latter has been adopted by all succeeding authors, and changes the specific names of two species, though without good reasons for so doing. De Geer, in the 7th volume of his "Memoires pour servir à l'Histoire des Insectes," 1778, gives a good many details concerning this genus, pointing out two or three errors into which Swammerdam had fallen, and giving very accurate descriptions of some portions of their anatomy. He describes at length, and figures very prettily, and with considerable faithfulness, four different species, two of which previous to this had only been noticed by Muller in his "Zool. Dan. Prodromus." Blumenbach, in his "Handbuch der Naturgeschichte," 1779, mentions one species of this genus, the Mon. pulex; and Eichhorn, in his "Beytrage zur Naturgeschichte der Kleinsten Wasserthiere," 1781, gives a tolerable figure of the same species. Gmelin, in his edition of Linnæus's "Systema Naturæ," 1788, gives all the nine species of Muller, and adds to them the Mon. pediculus, which Muller had formed into a genus by itself, the *Polyphemus*. Manuel, in the "Encyclopedie Methodique," 1792, gives all Muller's species, merely quoting his descriptions and copying his figures. Fabricius, in his "Entomologia Systematica," 1793, changes Muller's names in one or two instances, but merely gives his nine species. Donovan, in his "Natural History of British Insects," 1802, gives but an indifferent figure of a species taken when in its young state, and which appears to be the D. vetula. He calls it "Monoculus Conchaceus," and makes a few remarks upon its habits and manners, giving a frightful picture of its ferocity and cowardice! By numerous filaments which it darts forth, he says, it causes such motion in the water as to attract unresistingly the insects in the water to its mouth. "Thus it exists," he concludes, "a life of rapine and destruction, enjoyed at the expence of the lives of thousands; and as the objects of

its ravenous disposition are defenceless, so are they the sport of their conqueror ; the few moments of intermission its craving appetite grants them, is occupied equally in the spoil, first pressing them to death, and then tossing them undevoured into the fluid. But should a more powerful insect oppose him, he immediately contracts his parts, and nothing more than the external covering is open to his antagonist's violence, and he will sooner die ignobly than offer the least opposition." * Latreille, in his " Hist. gener. et partic. des Crust. et Insectes," 1802, gives all Muller's species, retaining his names ; and they are given in the same manner by Bosc in his " Hist. Nat. des Crustac. edit. de Buffon par Deterville," 1802 ; both authors giving a number of general details with regard to the genus. Ramdohr in 1805, published a detailed account of the anatomy of two species, the *D. sima* and *longispina* of Muller, in his " Beytrage zur Naturgeschicte einigen deutschen Monoculus-arten." Previous to his time, Schœffer, De Geer, and Muller, were the only authors who had attempted any particular anatomical details, and this memoir of Ramdohr added much to what they had already done. Lamarck, in his " Hist. Nat. des Animaux sans vertébres," 1818, gives two species from Muller ; and Samouelle, in his " Hist. of British Insects," 1819, gives one. In " Rees' Cyclopædia," 1819, we have all Muller's species ; while Leach, in his article " Crustaceology," in the " Edinburgh Encylopædia," 1820, only gives the *D. pulex*. From the time when Muller's " Entomostraca" appeared, up to this period, no additions to the species had been made—and, with the exception of Ramdohr's memoir already mentioned, no original matter had been published concerning the genus—though, as I have already observed in my former papers, this work of Ramdohr's seems to have attracted no notice from any of the authors who succeeded him. In 1820, Jurine's splendid work on the " Monocles qui se trouvent aux environs de Genêve," made its appearance after the death of the talented and lamented author, in which we have a variety of extremely interesting information, not only with regard to their anatomy, but to their habits and manners. About the same period, an elaborate and most excellent paper on the genus was read before the Academy in Paris, by M. Straus, and published in the " Memoires du Museum d'Hist. Nat." 1821. To these two authors we owe the greater part of our knowledge with regard to these curious insects ; their labours and experiments having brought to light much information with regard to their economy, which had escaped

* Vol. i. p. 15.

all the previous writers. Jurine describes six species which had not been described by Muller, and Straus describes three, though some of them seem to be only varieties. Desmarest, in his work "Consid. Generales sur les Crustacés," 1825, enumerates fourteen species which had been described by the authors who had written before his time, and which have been found in France—but adds no new ones. Gruithuisen has published a very interesting memoir upon the *D. sima* (Muller) in the 14th vol. of the "Nova acta Physico-Medica Academia Cæsariæ Naturæ Curiosorum," part 1st, 1815, in which he describes at some length the circulation of the blood as observed by him in this insect. He describes two hearts, the arterial heart and the venous heart, and gives a figure much magnified of the blood in motion. * His figure of the insect itself, however, (Fig. 1–2,) is either not very correct, or it is a species different from the *Sima* of Muller.

Habits and Manners.—These insects are only to be found in fresh water, generally in ponds and ditches, where there is much of the lemna or duck-weed floating on the surface. In such places they are often to be found in myriads, and almost the whole year round; and as they sometimes, and in some species, assume a reddish colour, they have been said to have tinged the water with the hue of blood. Swammerdam asserts this to be the case, and says that he has seen them in such numbers at Vincennes, as actually to give the water of a horse pond the colour of blood; and he quotes a friend of his in Holland, a Dr Schluyl, who had observed the same occur in one of the canals near his house. This has been repeated by Derham, in his Physico-Theology,† and by others upon Swammerdam's authority; but no writer since Swammerdam's time has observed it himself. They are very prolific, having a great many layings, and some of the larger species having been observed to have as many as forty or fifty eggs and upwards in their matrix at once. According to Jurine, in June the young ones begin to have eggs about ten days after birth, and it is probable they continue to produce all the summer through at frequent intervals. The males are very few in number compared with the females, and are only to be met with at certain seasons. From this circumstance Schœffer and others have considered them as Hermaphrodites; and Sulzer, (as quoted by Straus,) though he oppugns this, gives a more singular opinion still, being of opinion that a copulation might take place with the young before they see the light of day! These au-

* Tab. xxiv. Fig. 6. † P. 364—(Note a.) Glasgow, 11th edit. 1745.

thors had never seen the males, nor ever witnessed the act of copulation. Muller and others, however, detected the male, and witnessed the act; and it is ascertained that one single copulation is sufficient not only to fecundate the mother for her life, but all her female descendants for several successive generations. This was observed by Schœffer, who followed them up to the fourth, by Straus to the fifth, and Jurine to the sixth,—the latter observing, that he thinks it probable it might extend in some species to the fifteenth generation. Extraordinary as this may appear, I have further found that the young produced from the ephippia are also fecundated by this one copulation, and have progeny; and that their young again also produce eggs, without the intervention of the male. I have followed up the successive generations as far as the fourth in the Daphniæ born in the usual manner; and as far as the third in those born from ephippial eggs, and have found from repeated experiments that those Daphniæ which had ephippia became loaded with eggs soon after they had thrown off their ephippia, and had progeny again without the intervention of males; and that the young so born from those Daphniæ, which had thrown off the ephippia, and become pregnant, were also independent of the access of the male, and became mothers in the same manner as the young of other Daphniæ. November 29, Isolated a D. pulex, with an ephippium. 30th, Ephippium thrown off. December 4, Daphnia has eggs. 8th, young ones born. 9th, has eggs again. 16th, young ones born. 20th, has eggs again. 24th, young born. 25th, has eggs again. January 6, young born. Mother has eggs again. 14th, young born. Mother again has eggs. 22d, young born. February 1, has eggs again. 8th, young born. On the 8th of December, isolated one of the young born from the subject of last series of observations, on the 30th November. 21st, has eggs. 28th, young born. 29th, has again eggs. January 9, young born. Mother has eggs again. 24th, young born. 25th, has eggs again. February 1, young born. Mother has eggs again. 9th, young born. 27th, has eggs again. March 8th, young born. In both these experiments the young were always removed from the vessel in which the mother was kept, as soon as born. On the 2d of November I placed several ephippia in a glass of clear water. On the 10th, two young Daphniæ were born. Isolated one of them. December 12, this Daphnia has given birth to several young, and has eggs again. 18th, has again given birth to several young. 19th, has eggs again. 24th, young born. 25th, has again eggs. January 6, young born. 25th, after two several moultings without producing eggs, has again become

pregnant. February 1, young born. On the 5th December, isolated a young Daphnia born from an ephippium. January 18, it has given birth to young. 19th, isolated two of these, both females. February 8, both of these have given birth to young. Isolated two of them. I was at this period obliged, from circumstances, to suspend my observations ; but the above experiment is sufficient to prove the fact, that the young born from an ephippial egg produce young, which in their turn become mothers without the intervention of the male.

According to Jurine, who has watched the act with great care, the following is the manner in which copulation is effected :— When the male attacks the female for this purpose, he springs upon her back, and gradually descends till he reach the inferior edge of her shell, and finds himself in a position where the open edges of the shells are opposed to each other. He then introduces the " harpons" and " filets" of his first pair of feet into the interior of her shell, and with them embraces her feet. Thus fixed, he then curves up his tail so as to touch the female, who at first is much agitated, but after a little time pushes out her tail also. They touch each other, and then the Daphniæ immediately separate, the male at the time of touching having been agitated with convulsive motions. The eggs are first to be seen in the shape of small round pellucid globules, which mark the situation of the ovaries placed along the sides of the intestine. These soon lose their transparency, become enlarged and continuous, and form a dark mass on the outer edge of the intestine, partly globular and partly elongated. The insect now changes its skin, and shortly after the eggs quit the ovary by the communication to be hereafter mentioned, and take their place in a spherical form in the open space on the back of the insect, where they remain till the time of expulsion quite free and unattached. At first they are quite round, and appear to consist internally of little globules like air globules. The shape then alters a little, becoming oval, and the globules augment in number, but as yet no trace of any part of the body is recognizable. A little afterwards we see a black spot in the centre, which is the eye, and which is the first organ visible. The other organs then begin to shew themselves, but it is not till near the end of the fourth day, or the ninetieth hour after laying, according to Straus, that motion is perceptible. At the end of the fifth day, according to the same author, they are launched into open day. They are from the first exactly like the parent insect, undergoing no metamorphosis, but merely differing in the less complete development of parts. In the D. pulex, the

young are ushered forth into the world, with the tail curved up within the shell; and very shortly after birth, (Straus says *previous* to birth, but Schœffer says a few moments *after*, which agrees with my own observation,) this tail may be seen to spring forth with a sudden jerk and assume its natural position. The setæ of the *rami* also may be seen to spring out in the same sudden manner, having been apparently folded up along the stem. The suddenness of this motion is attempted to be accounted for by Straus, from the instantaneous flow of blood into these organs, but it is evident that this rapid evolution of these parts is in a great measure owing to the insect frequently stopping in its career through the water, bending up its body within the shell, and pushing it quickly out again beyond its edges, while the rami are bent downwards, so as to enter the interior of the shell, where they are embraced by the feet of the insect, and quickly drawn through them so as to catch the ends of the setæ and raise them up. The motions of the insect during this process are exactly like those of the common house fly, when it stops to clean its wings and feet. In a very short time after birth, the insect is exactly like the parent, and gradually increases in size, till the shell becomes too small to hold it, when it throws it off, and comes forth with a new and a larger one. This process of moulting is a very curious one, and all important for the life of the animal. The intervals between each vary according to the season of the year, being shorter in summer than in cold weather. Schœffer says, in the young it takes place every two days, which agrees very nearly with Jurine's experiments performed in the month of June. In winter the intervals are somewhat greater. In the month of December I found them thus: December 8th, young one born. 12th, moulted first time. 14th, moulted second time. 17th, moulted third time. 21st, moulted fourth time, and has eggs. 29th, moulted fifth time. January 9th, moulted sixth time. 19th, moulted seventh time. In a young D. pulex born from an ephippial egg, the intervals were as follows: December 5th, young one born. 13th, moulted first time. 17th, moulted second time. 24th, moulted third time. January 3d, moulted fourth time, and has eggs. 11th, moulted fifth time. 18th, moulted sixth time. Each time it moults the insect increases in size, the moulting being evidently, as in the Cyprides, necessary for the gradual growth of the animal. The process does not seem to stop, however, when the insect has acquired its full growth, but, as far as I have been able to judge, continues during its whole life, even long after it has gained its full size. As in the case of the Cyprides, the shell of the Daphinæ soon be-

comes overgrown with moss or parasitic infusoria, and thus the insect's motions become much impeded, and at last entirely destroyed; the moulting, therefore, seems to be necessary in the full grown insect for the preservation of its life, for weak or sickly individuals may be seen frequently so overgrown with moss, &c., that motion and life are both soon arrested, the insect apparently not having strength enough to throw off its exuviæ. At the 4th moulting, * the young insect has eggs, which are deposited in the open space on the back, almost immediately after the old shell has been cast off. The time that the eggs remain there varies according to the season of the year. In summer, according to Jurine, three days; according to Straus, from four to six. In winter I have found the interval between the eggs, being deposited in the open space, and the young ones being born, to be eight days, as may be seen in the experiments detailed above. Moulting takes place every time after the young are born; and generally within a very short period of time after the change has taken place, eggs are again deposited. Occasionally, however, this does not take place, and then the insect remains without eggs for a space of time equal to that of carrying the eggs, when she moults again, and then has eggs. Straus says, that the young of the same laying are generally speaking all of one sex, the two sexes being seldom to be found together in the same birth. He also says, that the Daphniæ cease to produce at the approach of winter or to change their skin, and that they die before the commencement of frost. This does not accord with my experience, having found them in considerable numbers producing young and moulting as late as the month of December, after both frost and snow had taken place. Indeed I have found them as late in the season as February, though not in great numbers, but about that time they seem to disappear, and perhaps in a severe winter earlier, young ones only being to be met with in the spring. At particular seasons the Daphniæ may be found with a dark opaque substance on the back of the shell. This is what Muller has called the *Ephippium*, from the resemblance the substance has to a *saddle*. He was the first to take notice of this curious appearance; but though he describes it very well, and has given an accurate representation of it, he does not give any opinion upon the cause or use of the formation. Jurine next notices it, describes it well, traces its gradual formation from matter contained in the

* Straus says after the third; Jurine says generally between third and fourth. I have always found it to be after the fourth.

ovary, and gives it as his opinion that it is a disease these insects are subject to, the effect of which is to arrest their future fecundity. Straus, however, has been more fortunate in his observations upon this very curious formation, and has found it to be a substance containing two eggs, destined, he says, for the future generations of the insect in the spring, these eggs resisting the cold of the winter, which proves fatal to the perfect insect. Straus says, that they are generally to be met with in the months of July and August. Jurine mentions them as occurring as early as May ; and I have found them in abundance upon the insect as late as the end of the month of November. Jurine says, that after the third moulting has taken place, we may see a green matter in the ovaries, which differs both in colour and appearance from that of the eggs. After the fourth moulting this green matter passes from the ovaries into the matrix or open space on the back, and spreading forms the ephippium. At first it is of a grayish colour, and some hours after becomes of a black hue. When examined by the microscope it appears of a dense texture, composed of a sort of net-work of hexagonal cells. In the centre of this opaque mass we see two round or rather ovular bodies, placed one before the other, called ampullæ by Straus, who says that they are capsules opening like a bivalve shell. In each of these ovular bodies is contained an ovum covered with a horny shell, by which means they are protected from the cold of the winter, and enabled to resist the severity of the winter which kills the parent. At the next or fifth moulting, the Daphnia abandons the ephippium, which floats on the surface of the water, and remains containing the two eggs inclosed till next spring, when the young are hatched by the returning warmth of the season. " These two species of eggs," says Straus, " produced by the same animal, offer a very singular example in the history of animals, and show with what wisdom nature provides for the preservation of her smallest creatures." Straus says, he has frequently hatched the young from these ova by suddenly bringing them into a warm temperature. In the months of November and December, I ascertained the truth of Straus's statement, and witnessed the young hatched from these ephippial eggs by keeping them in my room. November 2d, I took several ephippia which I found floating on the surface of a saucer full of water containing D. pulex, numbers of which had ephippia attached to them, and placed them by themselves in a wine glass of clear water. 10th November, two young ones born. 16th, one more. 29th, two more born. 21st, one more. 23d, two more. November 29th, took se-

veral ephippia from the same saucer, and isolated them in the same manner. December 5th, three young ones born. 6th, two more. 8th, two more. 10th, two more. 16th, one more.

On the 19th November I isolated a Daphnia with the ephippium attached. 21st, it has thrown off ephippium. December 5th, one young one born from the ephippial eggs. I have repeatedly performed the same experiment, and have always found the same results. The young from these ephippial ova do not differ from those born naturally, unless that perhaps they are a little longer in coming to maturity. In a young Daphnia pulex born naturally on the 8th December, it moulted the first time on the 12th, or four days after birth ; fourth time and had eggs, on the 21st, or thirteen days after birth ; whilst in a young one of the same species born from an ephippial egg on the 5th of December, the first moulting was not till the 13th, or seven days after birth, and the fourth when she first had eggs, not till the 3d of January, or twenty-nine days after birth. The periods between each moulting are also longer than in the others. It has been asserted, as I have mentioned above, by Jurine, that these ephippia are the consequences of a disease these insects are subject to, and that they have the effect of arresting their future fecundity. From the experiments which I have detailed above, and which I have mentioned as having been also made previously by Straus, it is evident that they are not a disease, and that instead they are ova of a particular nature destined to outlive the severity of the winter, and to perpetuate the species which would otherwise perish altogether. From some experiments which I instituted upon this subject, I also found that Jurine is wrong in asserting them as arresting the future fecundity of the insects. On the 29th of December, I isolated two of Daphnia pulex with their ephippia attached. On the 30th, both had thrown off their ephippia, and both had moulted. Upon close examination I found that on the shell where the ephippia were situated, there was left a mark corresponding to its figure, and a scar or deeper mark like a cicatrix where the ampullæ containing the ova were situated. In the ovaries were to be seen the transparent globules or first appearance of the ova. On the 4th December, both had eggs lodged in their matrix ; and on the 8th the first family were born. Watched the farther progress of one of these Daphniæ. On the 16th December she had given birth to a second family, but did not moult till the 20th, when she again had eggs in her matrix ; and on the 24th gave birth to a third family. On the 6th January has given birth to a fourth family. January 14th, has given birth a to fifth family. January 22d, has given

birth to a sixth family. One or two other experiments, with the same results, prove satisfactorily that that assertion of Jurine's is incorrect.

The motion of most of the species of this genus is chiefly by short bounds through the water, the most important organ producing the motion being the rami, or arms, as Swammerdam calls them. Such is the motion or manner of swimming in the *pulex* and *vetula*, &c. but in the *cornuta* it is different, the motion in that species being continued, or produced by incessant motion of the rami, and not by short bounds at a time. In my paper on the Cyclops, (Vol. i. p. 319,) I have mentioned Jurine's experiments upon the faculty these insects were said to possess of returning to life after being dried. Schœffer has instituted some experiments upon this subject with regard to the Daphniæ also, and his results are, that after having exposed the insect with eggs in the matrix, for a considerable time to a dry atmosphere, and then replacing it in water, the eggs did not lose their vitality, but were after a time hatched as usual. Sulzer, as quoted by Straus, says that the parents return to life also; but in the experiments reported by Straus, he never found either mother or eggs recover their vitality. The food of these insects, according to Straus, consists of vegetable matter, and not animal; but I have no doubt that they are carnivorous, as well as the other genera I have mentioned; as I have invariably found that of two groups placed in separate small vessels of clear water, the one having only particles of vegetable matter placed beside them, while with the others there were also introduced minute animalcules, the latter were stronger and more active and throve better than the former.

(To be continued.)

IV.—*Remarks on the Mosses found in the neighbourhood of Aberdeen.* By G. Dickie, Esq.

Before proceeding to enumerate the mosses found in this neighbourhood, it will perhaps be necessary to give an outline of the botanical character of the district in regard to its flowering plants. This I shall do as briefly as possible, taking as a guide the remarks made by Mr Watson at pp. 58, 59, &c. of his interesting work on the Geographical Distribution of British Plants. On comparing the Flora of Aberdeen with the remarks at pp. 60, 61 of the work referred to, it would appear that this district partakes of the character both of the *northern* part of the *Region of the Plains* and also of the *Upland Region*, the former toward the north being characte-

rized by the presence of Pinguicula vulgaris, Parnassia palustris, Geranium sylvaticum, Trollius europæus, Lysimachia nemorum, Carex dioica, Gymnadenia conopsea, Habenaria bifolia, Hab. viridis, Narthecium ossifragum, Comarum palustre, and more rarely Empetrum nigrum. All of these plants are extremely abundant about Aberdeen, with the exception of Trollius Europæus and Habenaria viridis, which are rare. Empetrum nigrum is abundant, growing upon our moors in a peat soil, occurring also in gravelly soil, and even growing in pure sand, and in this latter situation binding our sand hills along with Ammophila arundinacea, Carex arenaria, Triticum junceum, Festuca rubra (var. hirta), and others. Mr Watson, at p. 61 of his work, states that the *Upland Region* is marked by the presence of Arbutus uva-ursi, Vaccinium vitis-Idæa, Polygonum viviparum, Linnæa borealis, Trientalis europæa, Cornus suecica, Corallorhiza innata, Sedum villosum, Oxytropis Uralensis, Galium boreale, and Listera cordata. Of these, in this neighbourhood, Trientalis europæa, Listera cordata, and perhaps Linnæa borealis are of most general occurrence, and more plentiful than some of the others; Arbutus uva-ursi, Vaccinium vitis-Idæa, Polygonum viviparum, and Galium boreale, are principally confined to a few spots, but there they are abundant. The latter of these is only found on the banks of the Dee, and I believe has not yet been found on Don side. Cornus suecica, Corallorhiza innata, and Oxytropis Uralensis have not as yet been detected in this district. From this short sketch it will be perceived, that (as has been already mentioned) the neighbourhood of Aberdeen partakes of the nature both of the *northern* part of the *Region of the Plains*, and also of the *Upland Region*, approaching, however, more to the former than to the latter.

The following list of mosses comprehends all which have as yet been found within the distance of ten miles of Aberdeen; and it may be proper to mention that many localities within that range still remain to be investigated. All of them have been gathered by myself in the places mentioned, with the exception of a few; in which cases, however, I shall mention the individual who found them.

List of Mosses.

Andræa rupestris.	On detached rocks near Bridge of Dee.
Phascum subulatum. } ——— cuspidatum. }	Abundant in several localities.
Sphagnum obtusifolium.	Abundant.
——— squarrosum.	Corsehill and Stocket Bogs.

Sphagnum acutifolium.	Same localities as last.
——— cuspidatum.	Loch Loirston, &c.
Gymnostomum ovatum.	Walls at Rubislaw.
——— truncatulum.	Banks of the Dee, &c.
——— fasciculare.	On mould in gardens.
——— microstomum.	Banks of Don and other places.
Anictangium ciliatum var α and β.	Frequent.
Splachnum ampullaceum.	This beautiful species has only hitherto been found in Corsehill Moss near Scotstown. It was found by Mr P. Grant of this place in July 1836.
Encalypta vulgaris.	Tops of walls near Denmore.
Weissia lanceolata.	Banks of Don and Dee.
——— cirrata.	On detached stones at Nigg.
——— curvirostra.	Banks at Denmore and Rubislaw.
——— crispula.	Along with W. cirrata.
——— controversa.	Banks near Girdleness and other places.
Grimmia apocarpa.	Var. α common. var. β Dens of Rubislaw and Cults.
——— maritima	Abundant on the coast near Aberdeen.
——— pulvinata.	Common.
——— tricophylla.	On stones at Rubislaw.
——— ovata.	Rocks near Aberdeen. Mr P. Grant.
Didymodon purpureus.	Everywhere abundant.
——— rigidulus.	Rubislaw quarry.
——— trifarius.	Banks of Don.
——— heteromallus.	Along with D. trifarius.
Trichostomum lanuginosum.	Den of Maidencraig.
——— canescens.	On stones at Middleton.
——— heterostichum.	Frequent.
——— aciculare.	Moist rocks at Leggart.
——— fasciculare.	On stones at Rubislaw, &c.
——— polyphyllum.	Along with T. canescens.
Dicranum bryoides.	Abundant in several places.
——— adiantoides.	Moist shady places at Nigg, &c.
——— taxifolium.	Moist banks of Don.
——— glaucum.	Moist fir-woods at Rubislaw.
——— cerviculatum.	Den of Maidencraig, &c.

Dicranum flexuosum.	Den of Rubislaw, &c.
——— squarrosum.	Moist places, Bay of Nigg.
——— pellucidum.	Rubislaw Den, in the burn.
——— undulatum.	At Belhelvie, near Aberdeen.
——— scoparium.	Abundant.
——— varium.	Rubislaw quarry, &c.
——— heteromallum.	With the last.
——— subulatum.	Banks of Don, and at Torry.
Tortula muralis.	Frequent.
——— ruralis.	Aberdeen Links, and other places.
——— subulata.	Abundant.
——— unguiculata.	Banks of Don.
——— fallax.	Frequent.
Polytrichum undulatum.	Rubislaw, Stocket, &c.
——— piliferum.	Frequent.
——— juniperinum.	Tops of walls.
——— commune.	Stocket Moss, and other places.
——— urnigerum.	Rubislaw quarry. Abundant.
——— aloides.	With P. urnigerum, and in other places.
——— nanum.	With P. aloides.
Funaria hygrometrica.	Abundant, generally associated with Tortula subulata, and Didym. purpureus.
Orthotricum cupulatum.	Craig of Nairb.
——— anomalum.	Walls at Drum.
——— affine.	Trees and wall in several places.
——— diaphanum.	On stones at Powis.
——— rivulare.	On stones at Gilcomston Dam.
——— crispum.	Dens of Rubislaw and Maidencraig.
——— pulchellum.	On birch trees, Den of Leggart.
Bryum androgynum.	In fissures of gneiss rocks, banks of Dee, and Den of Maidencraig.
——— palustre.	Bogs at Corsehill, Ferryhill, &c.
——— argenteum.	Abundant.
——— capillare.	Belhelvie and other places.
——— cæspititium.	Common.
——— nutans.	Rubislaw quarry, and other places.
——— turbinatum.	Banks of Black Dogburn, Belhelvie.
——— ventricosum.	Corsehill and Ferryhill mosses.
——— ligulatum.	Dens of Rubislaw and Leggart.
——— punctatum.	With B. ligulatum.
——— rostratum.	Old Town Links.

Bryum hornum.	Den of Rubislaw, &c.
——— cuspidatum.	With the last.
Bartramia pomiformis.	Banks of Don, Rubislaw, &c.
——— fontana.	Strocket Moss, and other places.
Buxbaumia aphylla.	"Wood near Aberdeen, Mr Jackson." Hooker's Fl.
Fontinalis antipyretica.	Abundant in many places.
Hookeria lucens.	In a wood at Old Bridge of Don.
Hypnum trichomanoïdes.	Den of Cults.
——— complanatum.	On trees in several places.
——— undulatum.	Den of Rubislaw, &c.
——— denticulatum.	Den of Rubislaw.
——— populeum.	Shady rocks in several places.
——— molle.	Den of Rubislaw in the rivulet.
——— stramineum.	In Denburn.
——— purum.	Plentiful.
——— murale.	On walls at Rubislaw.
——— piliferum.	Den of Cults.
——— Schreberi.	Hazelhead woods.
——— catenulatum.	Moist rocks at Old Bridge of Don Mr P. Grant. On rocks upon the coast.
——— plumosum.	Banks of Don.
——— alopecurum.	Den of Cults.
——— dendroides.	Old Town Links.
——— myosuroides.	Den of Rubislaw and other places.
——— proliferum.	Frequent.
——— rutabulum.	Common.
——— velutinum.	Common.
——— ruscifolium.	Dens of Rubislaw and Cults.
——— striatum.	Banks of Dee, &c.
——— confertum.	Den of Rubislaw.
——— cuspidatum.	Ferryhill, Stocket, and other places in Bogs.
——— polymorphum.	Den of Rubislaw, Stocket, &c.
——— stellatum.	Corsehill Moss.
——— loreum.	Common.
——— triquetrum.	Abundant in woods.
——— squarrosum.	Woods at Rubislaw.
——— palustre.	Black Dog Burn, Belhelvie.
——— aduncum.	Moist banks at Torry.
——— uncinatum.	Den of Leggart.

Hypnum commutatum.	Den of Rubislaw.
——— scorpioides.	Ferryhill and Corsehill bogs.
——— cupressiforme.	Abundant.

From this list it will be remarked, that, of the twelve British species of Phascum, only two have hitherto been detected in this neighbourhood. This may perhaps be partly accounted for when it is considered that they are generally minute plants, and not, therefore, readily discovered. And, according to Sir W. J. Hooker, "the species are more frequent in the southern than the northern parts of Great Britain." It is, therefore, very probable that few if any other species remain to be discovered about Aberdeen. In Dr Greville's Flor. Edin. seven are mentioned. In the Parisian Flora of Merat, twelve species are enumerated; and at Hudson's Bay, where the mean annual temperature is low, no species of Phascum is found, according to Richardson, in Edinburgh Phil. Jour. Vol. xii.

The species of Didymodon and Trichostomum found in this district are, with one exception, the same as those mentioned in Flor. Edin. Didymodon purpureus is one of the most common and abundant mosses about Aberdeen, and occurs in many different varieties of soil and situation. It frequently springs up along with Funaria hygrometrica, where the Ulex Europæus has been burnt down. Of the species of Dicranum, D. pellucidum is the rarest in this neighbourhood. D. squarrosum occurs near the sea level, along with Jungermannia blasia. I have gathered the same moss at a considerable height in Glen Callader. Orthotrichum anomalum seems to be mostly confined to a range of serpentine rocks at the locality mentioned, where it is abundant. I have seen only a few specimens on gneiss. O. pulchellum and O. diaphanum are the rarest, O. crispum and O. affine are the most common and abundant. Of the twelve species of Bryum all are more or less plentiful, except the interesting B. androgynum, which is of rare occurrence, and found upon gneiss. I have never yet seen it in fruit. Gemmæ are frequent and abundant, and from the readiness with which they germinate, there is no difficulty in accounting for the propagation of this beautiful species. B. palustre and B. ventricosum are common in our peat bogs, along with Hypnum scorpioides and cuspidatum, and all these four occur along with Splachnum ampullaceum in the only locality where this elegant moss is found. Bryum palustre frequently bears gemmæ as well as capsules. B. ligulatum and punctatum are abundant in some places, and generally grow in company. Specimens of the former are found with nine setæ

arising from nearly the same point of the stem. Buxbaumia is mentioned upon the authority of Mr Jackson, in Hooker's Flora, Vol. ii., as growing near Aberdeen, but I have never had the pleasure of gathering it. Fontinalis antipyretica is very abundant in slow running streams. It is, however, rarely found here in fruit. The brilliant Hookeria lucens is plentiful in the locality mentioned. In Brit. Flora, Vol. ii. p. 74, it is mentioned that the stems sometimes reach a length of four inches. In this part of the country they never exceed two inches. Hypnum catenulatum is the rarest of the species enumerated. The list is, I suspect, rather deficient; many species of Hypnum, without doubt, have not yet been detected. Several of them, especially H. loreum, triquetrum, &c. afford a soil and shelter favourable to the growth of the elegant Goodyera repens, so plentiful in nearly all the old fir woods in the neighbourhood of Aberdeen.*

When engaged in examining the species of the genus Hypnum, I have frequently observed that there is a very evident difference in the form, and even in the cellular structure, of the stem leaves, and of the perichætial leaves. Might not this difference be assumed as a specific character in some cases? I leave it to some more experienced muscologist to follow out this suggestion.

List of Hepaticæ found near Aberdeen.

Marchantia polymorpha.	Abundant.
—— hemisphærica.	Banks of Don, &c.
Jungermannia asplenioides.	Abundant in several places.
—— cordifolia.	Banks of Don.
—— crenulata.	With the former.
—— inflata.	Corbie Den at Maryculter.
—— excisa.	Banks of Don.
—— ventricosa.	Den of Rubislaw.
—— bicuspidata.	Frequent.
—— pusilla.	Banks of Don and other places.
—— umbrosa.	Den of Rubislaw.
—— undulata.	Moist rocks upon the coast.
—— albicans.	Bay of Nigg.

* Goodyera occurs at the following places near Aberdeen: In a fir wood at Drumoak, at the thirteenth milestone, on the Deeside road; at Hazelhead, Denmore, Parkhill, in a fir wood opposite Fintray House, where Linnæa borealis also grows; at Loch of Skene, in two different woods. The firs at these places are from forty to sixty years old. The plant is also springing up in a wood at Middleton, three miles up Deeside. This wood does not much exceed twenty years.

Jungermannia cochleariformis.	With the former.
——————— complanata.	On trees, Dens of Rubislaw and Leggart.
——————— bidentata.	Stocket Moor.
——————— barbata.	Den of Rubislaw.
——————— serpyllifolia.	Abundant on trees.
——————— Tamarisci.	Rocks upon the coast.
——————— dilatata.	On trees, Den of Rubislaw.
——————— multifida.	Common in several bogs.
——————— Blasia.	Bay of Nigg and Den of Leggart.
——————— epiphylla.	Frequent.

To these must be added a minute species which is found upon Hypnum piliferum, round the stems and leaves of which its slender branches are entwined. It is also sometimes found on Polytrichum aloides. The leaves of this species are ovato-lanceolate, acutely bipartite, and rather distant from each other. It seems to come near Jungermannia Turneri. I have not as yet found it in fruit. J. Blasia is said to be rare in fruit. It is abundant in the localities mentioned, both in fruit, and with the flask like bodies. Jun. epiphylla is mentioned in British Flora as bearing fruit in September. In this neighbourhood it invariably sends out its "white sparkling silvery threads," or fruit-stalks, in March and the beginning of April.

V.—*Observations on some New or Obscure Species of Plants.* No. I. By G. A. Walker Arnott, LL. D. F. L. S., &c.

Calotropis, *R. Brown.* (Asclepiadeæ.)

In the second volume of the Hortus Kewensis, Brown describes two species of this genus, one, the *C. gigantea,* from India, the other, *C. procera,* from Persia. Dr Hamilton, in the Linnean Society's Transactions, Vol. xiv. p. 246, conceiving that he had found the Persian plant also in India, described a new species as such, and to which Dr Wight, in his Contribution to the Botany of India, gave the name of *C. Hamiltonii.* Since then Dr Wight has made further observations on this species in the Madras Journal of Literature and Science, Vol. ii. p. 69. t. 1. although, through inadvertency, he has resumed the name of *C. procera.* Having had no opportunity of examining the plant of the Hortus Kewensis, it may appear presumptuous in me to attempt to decide on the difference, if any, between it and Hamilton's; but having received from Arabia Petræa, a specimen of a *Calotropis,* which answers to the short character given by Dr Brown, I have little doubt of its being the same as that from

Persia, and between it and Hamilton's plant there is so considerable a difference in the form of the leaflets of the corona, that the two can be distinguished with great facility. In *C. gigantea* the leaflets of the corona are three-toothed at the apex, and then flat and close pressed to the column, while their base is spirally recurved: in *C. Hamiltonii* these have a conduplicate bifid patulous apex, and an acute simply recurved base: in what I consider the true *C. procera*, the apex is precisely as in *C. Hamiltonii*, but the base as in *C. gigantea*. The characters of the Indian species are given in Wight's Contributions and the Madras Journal; the Persian and Arabian one is distinguished as follows:—

C. procera; corolla campanulata segmentis patulis margine planis, coronæ staminеæ foliolis gynostegium æquantibus basi obtusa circinnatim recurva apice conduplicato bifido patulo, stigmate plano.

It thus agrees most with *C. Hamiltonii*, but differs by the form of the base of the coronal leaflets.

Blyttia, *Arn.* (Asclepiadeæ.)

Corolla rotata 5-partita. *Corona* staminea simplex, 5-phylla, foliolis ovalibus, obtusis, discretis, carnosis, planiusculis. *Antheræ* membrana terminatæ. *Massæ* pollinis ventricosæ, pendulæ. *Stigma* muticum. *Gynostegium* exsertum. *Folliculi* læves, abortu subsolitarii. *Semina* comosa.

Fruticulus *sesquipedalis glaber*, ramis *patulis rigidis*. Folia *opposita, petiolata, oblonga vel oblongo-lanceolata, obtusa*. Umbellæ *interpetiolares, pedunculatæ, folio breviores*. Flores *parvi*.

1. B. *Arabica*, Arn.—Periploca? Stend. et Hochst. in Herb. Un. It. 1837. n. 816.

Hab.—In collibus granitosis prope Dscheddam: *W. Schimper*.

This genus is obviously closely allied to *Cynanchum*, particularly those species which have the corona deeply 5-partite; but here the leaflets are perfectly distinct and somewhat distant from each other. From *Xysmalobium* it differs by the corolla, and absence of denticuli between the larger leaflets of the corona.

Rhinolobium, *Arn.* (Asclepiadeæ.)

Corolla patens, profunde 5-fida. *Corona* staminea tubo filamentorum imposita, 10-phylla; foliolis 5, antheris oppositis, carnosulis, gynostegium æquantibus, subrotundis, intus sub apice recurvato dente erecto triangulari planiusculo auctis; 5 reliquis alternantibus minimis. *Antheræ* membrana terminatæ. *Massæ* pollinis teretes,

apice attenuato affixæ, pendulæ, appendiculis gracilibus. *Stigma* truncatum pentagonum. Folliculi . . . . .

Herbæ? *erectæ, vimineæ, graciles, simplices, subpubescentes.* Folia *opposita, linearia.* Umbellæ *interpetiolares, subsessiles; pedicelli filiformes, foliis multo breviores, ac calyces pubescentes.* Flores *parvi.*

1. R. *tenue* (Arn.) foliis lineari-filiformibus margine revolutis. Ad Caput Bonæ Spei legit *Cl. Harvey* (Herb. Harv. n. 629.)

This genus is allied in character to *Xysmalobium*, also from the Cape, but that is destitute of the projecting toothlet, which arises in this from the inside of the coronal leaflets. *Cynanchum filiforme* Thunb. is apparently another species with broader and flat leaves.

Besides the present, I have received only two other Cape species of Asclepiadeæ from Mr Harvey: one is *Cynanchum pilosum*, R. Br. (Herb. Harv. No. 413.); and the other *Secamone Alpini*, R. and S. (Herb. Harv. no number.)

In Wight's "Contributions," and Decandolle's fifth volume of the "Prodromus," two plants are referred to the genus *Blepharispermum*; but on account of the specimens of one of them being imperfect, the character was principally taken from *B. petiolare*. More lately, having received additional specimens of *B. subsessile* from Dr Wight, I am now enabled to describe it more fully; and as it cannot be conjoined into one genus with *B. petiolare*, (unless indeed *Athroisma* be also united,) I shall here give the reformed character of *Blepharispermum*, as well as of the new one.

BLEPHARISPERMUM, *Wight.* (Compositæ.)

Capitula innumera in glomerulum globosum coacervata; axi hemisphærica. *Bracteæ* sub glomerulo oblongo-lanceolatæ, membranaceæ. *Capitula* 4-flora, monoica. *Receptaculum* paleaceum. *Involucrum* oligophyllum. *Flores* exteriores 2, feminei, filiformes, tridentati; interiores 2, masculi, tubulosi, 5-dentati. *Antheræ* basi sagittato-subcaudatæ. *Stylus* fl. masc. subinteger. *Achenium* femineum obovali-oblongum, tetragono-obcompressum, angulis lateralibus ciliatis, cæteroquin glabrum; mascul. tetragonum, lineare, glabrum. *Pappus* fem. e paleis scariosis, paucis, inæqualibus, acuminatissimis; masc. nullus.

Suffrutex *Ceylanicus, glaberrimus.* Folia *alterna, petiolata, ovato-lanceolata, acuminata, integerrima, penninervia.* Glomeruli *longe pedunculati, terni ad apicem rami, bracteis involucralibus glomerulo brevioribus.*

1. B. *petiolare*, D. C. *in Wight. Contr.* p. 12; *Prod.* v, p. 368; *Wight. Cat. n.* 1417.

Hab.—In Ceylona, prope Ugandamlej; *Klein.*

I have here followed Klein's views (as mentioned in Wight's Contributions) of the structure of the capitulum, in preference to those of Decandolle, as they agree better with my own observations. Decandolle himself, before he was aware of Klein's memoranda on the subject, appears to have had doubts if such were not the real structure.

Leucoblepharis, *Arn.* (Compositæ.)

Capitula innumera in glomerulum hemisphæricum coacervata; axi plana. *Bracteæ* sub glomerulo ovatæ, mucronatæ, foliaceæ. *Capitula* 8-flora, monoica. *Receptaculum* paleaceum, paleis concavis. *Involucrum* oligophyllum. *Flores* exteriores 4, feminei, tubulosi, 4-5-dentati: interiores 4, masculi, apice latiores, 5-dentati. *Antheræ* basi sagittato-subcaudatæ. *Stylus* fl. masc. integer, apice incrassatus. *Achenia* nigra, nitida, hinc plana, illinc convexa, marginibus dense villis albis longis erectis ciliatis; fem. late-ovalia, obcompressa, angulo dorsali paullum albo-ciliato; masc. angustiora, dorso convexiore subglabro. *Pappus* conformis, paleis scariosis, plurimis, flexuosis, inæqualibus, acuminatissimis, villis achenium marginantibus absconditis.

Herbacea, *glabra, simplex.* Radix *crassa, præmorsa, lignosa.* Folia *alterna, subsessilia, elliptica, utrinque obtusa vel attenuata, integerrima, triplinervia.* Glomerulus *terminalis, solitarius, subsessilis, bracteis involucralibus glomerulum superantibus.*

1. L. *subsessile,* Arn.—Blepharispermum subsessile, *D. C. in Wight. Contr.* p. 12; *Prod.* v. p. 368; *Wight. Cat. n.* 1418.

Hab.—In Mysore; *Heyne.* Prope Bellary; *Wight.*

By comparing this generic character with that of *Blepharispermum*, it will be seen that it differs very widely in the structure of the achenium and pappus of the sterile floret, in which respect it approaches much more to *Athroisma;* but in that genus the angles of the acheninm are merely ciliated at the apex, and the pappus appears to be composed only of a few short hairs. The habit of these two genera is also very unlike.

Madaroglossa, *D. C.* (Compositæ.)

This genus is said by Decandolle to be allied to *Blepharipappus* of Hooker, but to differ by the ray having no pappus. From a slight examination of specimens of both genera in Sir W. Hooker's Herbarium, it seems that both these distinguished botanists have the same in view; but that either ought to be separated into two genera.

Sir W. Hooker's character comprehends both; but Decandolle's is more limited, so much so, indeed, as to exclude, perhaps, all the species he refers to it. In Lindley's Nat. Syst. of Botany, p. 443, I separated *B. glandulosus* under the name of *Eriopappus*, proposing to retain *Blepharipappus* for *B. scaber*. About the same time that my genus was published, or perhaps previously, Fischer and Meyer defined the same under the name of *Callichroa;* and indeed, so far as I can judge by the description, *Blepharipappus glandulosus*, Hook. *Madaroglossa heterotricha*, D. C. Prod. v. p. 694, and my *Eriopappus glandulosus*, are scarcely distinguishable as species from *Callichroa platyglossa*, F. and M. To *Blepharipappus* I would refer *Madaroglossa hieracioides*, and *M. angustifolia* of Decandolle. In *Madaraglossa* the achenium of the ray is said to be glabrous, and the styles of the disk florets included. The latter is characteristic of what I consider the true species of *Blepharipappus*, and the former of *Eriopappus* or *Callichroa;* but indeed *Mad. angustifolia* is expressly said to have the achenia of the ray villous.

LASTHENIA, *Cass.* (Compositæ.)

This genus, as defined by Decandolle, requires some elucidation. In his character, which it is unnecessary to quote at length, the capitulum is said to be nearly homogamous, that is, without any conspicuous ray, the female florets being small and tubular; the involucre to be 5–8–15–toothed, and the pappus of 5–10 paleæ, or *wanting*; while he adds, that it differs from *Gamolepis* by the capitulum being nearly homogamous, and by having a *paleaceous* pappus. Three species are described; one with a paleaceous pappus and an obscure ray: this (*L. obtusifolia*, Cass.) which is the type of the genus, is the *Rancagua* of Poeppig, *Hymenatherum* of Lessing, (but not of Cassini,) and *Coilopodium Chilense* of Decandolle, Prod. v. p. 642, (noticed under *Hymenatherum Kunthii*): to it the whole generic character given by Decandolle applies, with the exception of the involucre being 15-toothed, and a pappus of 5 or no paleæ. Another species is *L. glaberrima;* of this the ray is not mentioned, but the involucre is said to be 15-toothed, and the pappus of 5 paleæ. What plant Decandolle has had in view, and which he received from the Horticultural Society, I cannot determine, but what I have received from Professor Lindley has a large ray, and is the same with *Burrielia gracilis* of Decandolle; while that figured in the Botanical Register seems to have also a large ray, but no pappus, and to be either a variety of or closely allied to *L. glabrata*, Lindl. The third species, *L. glabrata*, mentioned by Decandolle,

has no pappus, and a large ray: and consequently, as far as the ray is concerned, must, along with that figured by Lindley, and quoted by Decandolle under his *L. glaberrima*, be removed from *Lasthenia*. It appears that this must have been Decandolle's first intention, and that the manuscript genus *Gamolepis* was intended to contain these. It is allied to *Baeria* of Fisch. and Mey., but in that genus the leaflets of the involucre are free from each other. I am therefore disposed to keep the Chilian plant alone in the genus *Lasthenia*, and adopt the genus *Gamolepis* for Decandolle's second section from California.

Monactis, *H. B. K.* (Compositæ.)

In the generic character the scales or leaflets of the involucre are said to be lanceolate-linear. The form is perhaps of little consequence, and I possess a plant collected by Mathews in the province of Chachapoyas in Peru, which seems principally to differ from *M. Flaveriæ*, Dec. by that character. Omitting then from Decandolle's character of the genus, the words "squamis lanceolato-linearibus," I would distinguish the two species thus:

1. *M. Flaveriæ*, (Dec.) squamis involucri lanceolato-linearibus.
2. *M. Kunthiana*, (Arn.) squamis invol. oblongis obtusis.

Kunth describes another species, *M. dubia*, but this Lessing has separated from the genus under the name of *Astemma*. In *Monactis* the ray is composed of a solitary floret; in *Astemma* no ray whatever could be traced. I am, however, inclined with Kunth to refer the latter to *Monactis*, as it is not improbable that in the few specimens examined the ray had dropped off. As a species of *Monactis*, I scarcely know to distinguish it from *M. Kunthiana*, a name which perhaps ought to be retained, as that given by Kunth is inadmissible on the supposition of its actually, as in Mathews' plant, possessing one large ligulate floret in each capitulum, and being a true, not doubtful species of the genus.

Heliopsis, *Pers.* (Compositæ.)

Of this Decandolle describes the achenia, "angulato-compressa glabra, omnino calva." In the species which I have examined, I find uniformly the achenia, when young, to have a pappus of four small ciliated teeth, which may sometimes also be traced in the advanced fruit: the achenia of the ray are triquetrous, of the disk 4-quetrous.

Micropsis, *Dec.* (Compositæ.)

To *M. nana*, Dec., I refer a plant collected by Mr Bridges in

Chili, (n. 642 of his collections) : but Decandolle's generic character, although agreeing in most points, yet differs somewhat from the following drawn up from Bridges's specimens :

Involucrum scariosum subbiseriale : *capitulum* heterogamum pauci-(sub 9)-florum : floribus femineis uniserialibus, filiformibus in ambitu ; hermaphroditis tribus tubulosis in centro, intra rachidis bracteolas uniseriales isarithmas dispositis. *Antheræ* basi bisetosæ. *Stylus* hermaph. ramis pube infra apicem decurrente obsessis. *Achenia* estipitata, erostria, oblonga ; fem. sericeo-villosa, villis pappum occultentibus ; hermaph. glabra, compressiuscula, hinc linea sericea notata, bracteolis membranaceis valde concavis apice scarioso-appendiculatis, dorso gibbis omnino involuta. *Pappus* conformis, coroniformis, brevissimus, crenato-dentatus, persistens.

Herba *pygmæa, annua, albo-tomentosa.* Folia *oblonga-spathulata.* Capitula *glomerata, terminalia, foliis sub involucro obvallata.*

The principal difference between Decandolle's and the above description lies in the central florets, which he makes to be male, whereas I find them to possess a perfect style and achenium. He also says the receptacle is destitute of paleæ ; I find it paleaceous : he consequently arranges the genus near *Evax* and *Micropus* among the Plucheineæ, whereas I feel rather disposed to remove it near to *Filago* (*Giffago*, Cass. and Less.) among the Helichryseæ.

Having now noticed several genera of Compositæ, I may here mention that the genus *Clairvillea* of Decandolle appears to be quite the same as *Cacosmia* of Kunth, nor can I perceive any specific difference between the two plants. It belongs not to the Senecionideæ, but to the Vernoniaceæ, as proposed by Lessing. *Philoglossa* of Decandolle, if I be correct in referring to this a plant collected by Mathews in Peru, also belongs to the Vernoniceæ, and is allied to *Alibum*. *Apalus* of Decandolle is not distinct from *Blennospermum* of Lessing : both authors describe the same species from specimens collected by Bertero, and named by him *Unxia anthemidifolia*. *Kuhnia Arabica*, Hochst. and Stend. in Herb. Un. It. 1837, n. 863, is a species of *Pegolletia*, and scarcely different from *P. Senegallense*, Cass.

Saccharum, *L.* (Gramineæ.)

While lately preparing materials for an Agrostographia Indiæ Orientalis along with my friend Professor Nees von Esenbeck of Breslaw, I, like many other botanists, experienced more difficulty

while studying the genus *Saccharum*, and the group to which it belongs, than almost any others of the family. The following Clavis Analytica of the species, which I drew up to lessen my own labours in future, may perhaps prove useful likewise to others. Most characters are excluded which are not essentially necessary for distinguishing the species mentioned from each other.

Valvula flosc. hermaph. inferior vel deficiens vel neutri valde dissimilis; (Glumæ dorso glabræ; villi involucrales longi.)
- Gluma saltem inferior pallide chartacea, . . Sect. 1.
- Gluma basi brunneo callosa, . . Sect. 2.

Valvula flosc. hermaph. inferior neutri fere similis et æquimagna.
- Glumæ chartaceæ pilosæ, villi involucrales longi, Sect. 3.
- Glumæ brunneo-callosæ; villi involucrales breves, Sect. 4.

Sect. 1.—*Eusaccharum.*

Flosculi superioris valvulæ subæquales, minutæ, ovarium subæquantes, ... *S. officinarum*, L.

Flosculi superioris valvula superior lanceolata neutro dimidio brevior, inferior nulla, . . . *S. Sinense*, Roxb.

Sect. 2.—*Tylosaccharum.*

Flosculi super. valvulæ nullæ, spiculæ ovatæ, folia subulata canaliculata, ... *S. canaliculatum*, R.

Flosculi super. valvula infer. lineari-lanceolata, superior brevissima subquadrata, spiculæ lanceolatæ,
- Folia angusta nervo albo latiusculo canaliculato, panicula oblonga ramis compositis, . *S. semidecumbens*, R.
- Folia subulata omnino canaliculata, panicula linearis ramis sub simplicibus, . . { *S. spontaneum*, L. (*S. canaliculatum*, N. ab E. in Wight. Cat.

Sect. 3.—*Trichosaccharum.*

(Glumæ subulato-acutatæ: valvula inferior flosc. hermaph. setuligera.)

Folia canaliculata anguste linearia, nervo albo lato canaliculato, ... *S. Munja*, Roxb.

Folia plana:
- Paniculæ rami graciles laxi decompositi, . { *S. procerum*, Roxb. (*S. Sara*, Hook. et Arn.

Paniculæ densæ contractæ, rami stricti rigiduli:
- Spiculæ distantes; rami paniculæ elongati polystachyi, ... { *S. arundinaceum*, Retz. *S. exaltatum*, N. ab E. in Wight Cat.
- Spiculæ approximatæ, (rhachidis internodia pedicello spic. pedicellatæ vix longiora,)
  - Paniculæ rami subelongati decompositi polystachyi, *S. Sara*, Roxb.
  - Paniculæ rami breves oligostachyi, . *S. exaltatum*, Roxb.

Sect. 4.—*Gymnosaccharum.*

Spiculæ acutæ; folia versus apicem supra scabra,	*S. Baka*, Ham.
Spiculæ obtusæ:	
Folia versus apicem supra pilis brevissimis aspera,	*S. fusca*, Roxb. ? (*S. Narenga* Ham.)
Folia utrinque lævia,	*S. Modhuja*, Ham.

How far these are really distinct species, I will not here inquire. The three of the last section were perhaps all included by Roxburgh under his *S. fuscum*. As to *S. Sinense*, it is as commonly cultivated in the West Indies as *S. officinarum*, and is indeed the *S. officinarum* of Kunth's En. Graminum. I have not yet had an opportunity of examining any specimen referable to the description given by Roxburgh of his *S. Sara*. All the others I have seen.

Arlary, 10*th October* 1837.

VI.—*Contributions to the Natural History of Ireland.* By William Thompson, Esq., Vice-President of the Belfast Natural History Society.

No. 4.—*On the Birds of the Order Insessores.*

Cinereous Shrike,—*Lanius excubitor*, Linn.—This species has in a few instances been obtained in various parts of Ireland. In the north, Mr Templeton records two specimens from Down and Antrim, (Mag. Nat. Hist. Vol. i. p. 404, New Series,) and three individuals have subsequently been procured in these counties. In the former, one in mature plumage was shot at Echlinville, late in the autumn about fifteen years ago, and in the latter, an adult male was killed at Beechmount, near Belfast, in November 1826. This latter is preserved in Dr J. D. Marshall's collection. A second individual was in company with it, and remained about the place for a few weeks afterwards. Near the same locality, another shrike was shot during the few days of frost that prevailed at the end of January 1835. One has been mentioned to me as obtained near Mullingar, in Westmeath, and two in the county Dublin. Of these latter, one was killed on Shankill mountain in 1822, or 1823, and the other in the Phœnix Park about 1831. I have been informed that it has occurred in Tipperary more than once, and Mr R. Ball tells me that he has seen a specimen which was shot near the city of Cork in 1824.

I cannot say whether this species has ever bred in Ireland. (See Selby's Ill. Brit. Orn. Vol. i. p. 148, 2d ed., and Journal of a Na-

turalist, p. 187, 3d ed.) The respective dates of its occurrence elsewhere than in the north are unknown to me.

The Spotted Fly-catcher,—*Muscicapa grisola*, Linn.—Is a regular summer visitant to the north-east of Ireland, and probably to suitable localities throughout the country, though it has been but little noticed. From the dulness of its plumage, want of song, and its weak call being seldom heard, it is certainly one of the least obtrusive of our birds; the period of its arrival too, being prolonged until the trees have put forth their "leafy honours," further serves to screen it from observation.

It is the latest of the summer birds, appearing in the neighbourhood of Belfast about the 12th of May, and remaining till autumn is far advanced. In addition to the ordinary places selected for nidification here, as holes in walls and trees, &c. I have seen a nest resting in part upon an aperture in a wall, and partly on the branch of a fig tree trained against it. An observant friend has remarked, that one which he saw placed against the unglazed window of an out-house was so covered with cobwebs inside and out, that no other material was visible. In another instance, the parent bird was very bold on its nest being approached, flying angrily so near the intruder, that it might almost have been struck by his hand. The Rev. Thomas Knox informs me, that the spotted fly-catcher breeds about Killaloe, (county Clare,) and he supposes has occasionally either two broods, or builds a second time if the first nest be destroyed, as on the 1st of August 1833, he saw one sitting on young birds, though on the 8th of June in the previous year, he knew a brood to have been hatched. On this subject see White's Selborne, p. 179, ed. 1837, and Journal of a Naturalist, p. 207.

The Water-Ouzel—*Cinclus aquaticus*, Bechst.—Is as generally distributed over Ireland, as I may say from personal observation, it is in suitable localities in England, Wales, or Scotland. With the romantic and picturesque in scenery this bird is associated, frequenting the stream only so far as it can boast of such charming accompaniments; whenever it descends to the lowlands, to move sluggishly through the plain, the water-ouzel forsakes it to continue in its upland haunts. By Montagu and Selby it is described merely as a very early songster; but in the north of Ireland its song is occasionally heard at all seasons; and indeed most frequently in the winter months, the bright mornings and forenoons that occur during the most severe frost and snow, have always seemed to me the

favourite time. I have heard it sing when flying at a great height, as well as when perched just above the water.

It is remarked by Mr Selby, that these birds are seen "always on the margin of the stream, or perched in their particular attitude on some projecting stone in the middle of the water," and thus are they characteristically represented in his splendid "Illustrations of British Ornithology," as well as by Bewick, whose vignette more especially exhibits the species in its "rightful place" in connection with the scenery depicted; but about the ponds at Wolf hill, an elevated situation near Belfast, and where they have chiefly come under my observation, the willows that fringe the banks are their constant perch.

The first nest of this bird I remarked was placed in a hole in the clayey bank of a pond, where, owing to the shelter afforded, there was no occasion for the display of its domed architecture, and this was consequently dispensed with. This nest contained four eggs, from which three young were produced. As soon as these were fledged, they were to be seen early every morning, accompanied by their parents about the same pond, some singing, others diving from the rail on which they were perched into the water, none of them for a moment at rest; but when neither diving nor singing, going through the most grotesque and amusing evolutions. Thus were they a highly interesting group, presenting quite a picture of social happiness. Similar playfulness of manner I have frequently witnessed, though from being generally seen singly, the species is regarded as unsocial. In autumn, at a favourite haunt, I once saw a water-ouzel seated on a large stone singing, and jerking about its head most ludicrously, whilst a second individual moved in a saltatory manner round the base of the stone. The following note by a relative, who is an accurate observer, also illustrates the same trait: "On the 26th September,* a pair of water-ouzels, at the upper pond of Wolf hill, plunged several times into the water, which was some feet deep, and remained, moving about in it with only their heads above the surface; twice one of them disappeared altogether for a few seconds; they then pursued each other round the pond, alighted, when one of them sang, and they repeated over again several times all these manœuvres." Of five other sites observed to be selected for nidification in this neighbourhood, three were in the fissures of rocks close to the finest cascades of our mountain streams. One of them was tastefully placed on a niche near the summit of a waterfall of 30 feet, the rock directly above it rising to such an elevation as to render it

* The date is mentioned, to show that they are not any of the captivating arts preceding the nuptial season.

inaccessible. Here the nest was very large, formed of moss, and of the regular domed structure, upon which the spray from the cascade seldom ceased to beat, the water flowing over the rock being only about two feet distant. This, however, I fear, caused the desertion of the nest, as it was abandoned before the production of a brood; it was not completed until the 20th of April. On the 27th of the same month in a subsequent year, a nest containing young, and lined with the dried stalks of grass, and a few leaves, was observed at the side of a rock bordering a stream, and elevated a foot only above its surface. A fifth was placed in the hole of a wall beside an artificial fall* of the river Lagan. Throughout the breeding season of 1832, a pair of these birds frequented a shade erected over a large mill-wheel of nearly forty feet diameter, at Wolf hill, where it was presumed they had a nest, though in such a place it was impossible to discover it. Their appearance emerging from this gloomy and dark abode often caused surprise, especially when they sallied forth between the arms of the gigantic wheel when in motion, a state in which it was almost constantly.

The stomachs of two individuals which I examined in the month of December contained only the remains of the larvæ of aquatic *coleoptera*, and one in January exhibited but the fragments of insects. The stomach of one examined in October was, excepting two full-sized dorsal spines of a three-spined stickleback, (Gasterosteus,) filled with the remains of crustacea. A person who has had ample opportunities of observing the species, states, that from shallow water he has often seen it bring the larvæ of *phryganeæ*, and break their cases on a stone to get at the contained animal. I have repeatedly seen this bird dive into a pond of clear spring-water ten feet in depth.

As several authors to whose works I have just referred differ in their descriptions of the colour of the water-ouzel's legs, it may be remarked, that two mature specimens particularly inspected by me had the entire front (and it only) of the tarsi and upper side of the toes of a whitish colour, being in general appearance like the clouded or opaque part of a quill: all the rest was blackish. †

* To take a wider illustration than Ireland can afford of its partiality to falling waters, it may be remarked, that on the Rhine between Cologne and Schauffhausen only once did this bird attract my attention, and then it was at the great fall near the latter city. On the sublime alpine torrents of Switzerland it is always attendant; and about the fall of Velino, near Terni, in Italy, said to surpass all other European cataracts in the beauty of its surrounding scenery, either three or four of these birds appeared to me at one view.

† Mr Selby having remarked that the water-ouzel is "probably" met with in Derbyshire, it may be added, that I never saw the species more plentiful any

The Missel-Thrush—*Turdus viscivorus*, Linn.—Has of late years extended its locality in Ireland, as in other parts of the British islands, and is now found throughout the country. Previous to the last twenty years, it was very partially known, but now, from the southern counties of Clare, Kerry, Cork, and Tipperary, my correspondents attest its gradual increase, though in some of them it has been known for a very few years. To the extreme north-west it has penetrated, and although in Down and Antrim it was at the earliest period alluded to, confined to the richly wooded valleys, it now inhabits the plantations far as they stretch towards the mountain tops.

Like some others of the genus, the missel-thrush is in England considered only as an early songster, but, with the exception of the moulting season, its song may be heard in Ireland at every period of the year. Within the first fortnight of December 1832, I have notes of its singing on five different days.

The missel-thrush's nest is generally most conspicuous, being in every instance that it has occurred to me placed in the forking or junction of the main stem, or branches of trees, whether these be wholly bare or clothed with cryptogamic vegetation. In young plantations, rising from twenty to thirty feet, I have frequently seen it. May it not be on account of this exposed site, which according to the dictates of nature, is selected, that this species is at the same time endowed with the extraordinary courage and perseverance manifested in the protection of its nest? Often have I seen a pair of these birds driving off magpies, and occasionally fighting against four of them. On one occasion, a pair of hooded crows (Corvus cornix) joined, or it may be followed in the wake of a pair of magpies, in their assault on a nest at the "Falls," when the thrushes were unfortunately routed. By an ornithological friend, a pair of these birds was seen pursuing a kestrel (Falco tinnunculus) that approached their nest,—though probably without any felonious intent—when one of them struck it several times, and was as often foiled in the attempt by the hawk suddenly rising to avoid the coming blow. Respecting the pilfering propensity of the missel-thrush, I may mention that a few years ago a lady residing near Ballymena lost a lace-cap in spring, when out drying; in autumn, when the leaves began to fall, something white appeared in one of the trees, and on inspection proved to be the cap that had been used by one of these birds in the construction of its nest. In another instance, a

where than in that county, especially about the romantic Dove, and the river at Matlock.

similar depredation, but of a minor degree of turpitude, was committed last summer ; a narrow piece of net, a yard in length, having been carried off when bleaching, and afterwards, in my presence, found composing part of the nest of a bird of this species.

As soon as the breeding season is over, these birds assemble either in families, or large flocks, and are very destructive to the fruit in certain gardens and orchards about Belfast. On the 5th of July, I once saw two or three families congregated ; and on the 1st of August 1832, my friend at the " Falls" reckoned fifty-four in a flock at his garden, where, during the month, they consumed almost the entire crop of raspberries. Several of the young birds were caught in rat-traps baited with this fruit. Towards the end of August this same year, they resorted in such numbers to an orchard, containing the most venerable fruit-trees in the neighbourhood, that on one morning, twenty-six, and on the next, seventeen of them were shot, and, with one or two exceptions, singly : here late cherries were the attraction. Missel-thrushes were this year more than ordinarily abundant. In 1833, the report of the gardener at the " Falls" was not, however, very satisfactory—that since they had eaten the greater part of the raspberries, and had cleared the trees of the late crop of cherries, he had not seen many. I have been thus particular, as similar depredations on the part of this species have not been related in any ornithological work with which I am acquainted. In his " History of Selborne," White remarks, that " missel-thrushes do not destroy the fruit in our gardens like other species of *Turdi*," and on this passage not one of his numerous commentators has made an observation. In an anonymous contribution to the Magazine of Natural History, facts similar to these I have brought forward are recorded. (Vol. iv. p. 184.)

The stomachs of two individuals, examined by me in January and September, contained the remains of coleopterous insects in addition to vegetable food.

The Fieldfare—*Turdus pilaris*, Linn.—Is a regular winter visitant to Ireland, appearing in the north towards the end of October. Its departure is occasionally prolonged until a late period. On the evening of the 7th May 1836, my friend, William Sinclaire, Esq. at his residence, " The Falls", near Belfast, observed a large flock migrating in a north-east direction, and heard them calling as they passed overhead. He considers that they were on their way from some distant locality, as none had been seen in his neighbourhood for some time before ; but when the season was as far advanced

in the very late spring of 1837, they still frequented their winter quarters, the great body of them remaining longer than ever before known to him. I am likewise informed that they remained in the county of Kerry last spring until the end of April, a period later than had before been observed. With respect to his present neighbourhood, and that of Killaloe, his fomer residence, the Rev. Thomas Knox of Toomavarat, remarks in a letter to me, that the fieldfares are not so numerous, and are always later in appearing than the redwings, and that if the weather be mild, they retire for weeks together, though in the depth of winter, but one or two nights of frost are certain to bring them back again. When they disappear he thinks they visit the mountains. Such are their habits in the north, as in the open weather they frequent the upland districts, but are driven to the lowlands by frost and snow, (see Journal of a Naturalist, p. 259, third ed. for the opposite procedure.) Their favourite haunts around Belfast are the fields skirting the base, and most nearly approximating the mountains, more especially if surrounded by tall white-thorn hedges that for the sake of shelter have been permitted to grow to maturity in a state of unpruned and wild luxuriance.

When returning at a late hour from hunting, I have several times in the short days of winter raised flocks of fieldfares that were roosting near the summit of heath-clad hills considerably distant from their daily haunts, as well as from any hedges or plantations. A valued friend and correspondent states that he once saw a flock of about five hundred perched for the night on a spruce-fir near Youghal.

That fieldfares generally, as in England, leave the northern parts of this country when a severe frost sets gradually in, I have little doubt, from having at such times remarked their scarcity. Though the species is naturally wild and difficult of approach, such individuals as remain behind suffer so severely, perhaps from cold, in addition to the want of food, as to become easy victims to the most juvenile sportsmen.

As a difference of opinion exists among authors on the subject of the fieldfare's food, I give the contents of the stomachs of six individuals that I have examined, and which were killed at various times and places during two seasons. Of these one contained two *limacelli*, (internal shells of naked snails belonging to the genus *Limax*, Linn.) the remains of coleopterous insects, and some vegetable matter; with this last substance only the second was supplied; the third was filled with oats alone, though the weather had been mild for some time before, and when it was shot; the fourth contained worms and bits of grass; these last, together with pieces of

straw and the husks of grain, were found in the fifth,—the weather was severe and frosty for a week previously ; and the sixth was stored with the husks and a grain of oats.

The Song Thrush—*Turdus musicus*, Linn.—Is very common throughout this country, in which it is permanently resident. Although I have seen flocks of thrushes late in autumn, I agree with Mr Selby, that it is not our indigenous birds that so congregate, but that these bodies are on their migration from more northern countries ; confirmative of which there seems not any diminution of the species in its accustomed haunts, nor are these flocks seen, except for a short time at a particular season.

In England the thrush is considered only as an early songster, beginning its melody at earliest by the end of January, (Selby,) and continuing it until July, (Jenyns,) but in Ireland, where our winters are milder, its song is in the north, with the exception of the time of moulting, continued in fine weather throughout the year, and, as if it felt the winter day too brief, its melody ceases not even when the sun goes down. By reference to memoranda, it appears that in December 1831, I heard it at Wolfhill, on the 5th, 30 minutes, on the 19th, 40 minutes, and on the 26th, 45 minutes after sunset. In summer, too, indeed, its notes are sometimes prolonged until a late hour. On the 27th of May, I once heard them at half past nine o'clock P. M. ; and a friend informs me, that about midsummer he on one occasion heard them, in this neighbourhood also, at a quarter to ten o'clock P. M. In June I have listened to its song so early as a quarter past two o'clock A. M. When travelling in the month of June over a very wild mountain tract between Cushendall and Ballycastle, (co. Antrim,) covered with heath, and having no trees within miles of it, I heard two thrushes singing ; the nearer one, which I saw and listened to for some time, was perched on a ragweed (Senecio Jacobæa) that overtopped the heath. The next day I saw one at a still wilder place, near the summit of the promontory of Fairhead.

The favourite site of the thrush's nest in the north of Ireland is in evergreen shrubs, and young trees, and in beech hedges, yet even where these abound, it not unfrequently prefers placing it in the holes of walls and beneath the roofs of sheds. In one of the latter situations I knew a pair to build on the top of a beam for three successive summers, though this house was in the midst of shruberries and plantations. A relative, who has attended much to the nidification of birds, found the nest of a thrush containing five eggs, on the ground in a meadow, with grass about two feet high waving

over it. This also was at a place abounding in the ordinary situations that are selected. This same person once saw a nest in a pear tree in a well-kept garden, where mosses were scarce, that, excepting the inner coat of plaster, was entirely formed of hay. The thrush has commonly a second brood. I have several memoranda of young birds being unfledged late in August. The following remarkable instance of fecundity, &c. which seems worthy of being fully detailed, has been furnished me by Mr Edward Benn, an accurate observer:—Very early in 1836, a thrush built her nest in a beech hedge in our garden, at Saul, near Downpatrick. When the leaves were blown from the beech by the gales of early spring, she was quite exposed to view, but on perceiving herself looked at remained on the nest without being disturbed. We commenced feeding her with worms, which, to avoid startling her by a too near approach, were offered on the end of a long rod; then with bread, which was taken from the hand; she was now as tame as a domestic fowl. There were three young. When these were fledged a second nest was formed near the same place, and now she fed as before, but in a bolder manner. There were in this instance five young. When these were well grown, so as to fill the nest, she would perch on the edge, and feed from the hand, allow her plumage to be stroked, but if too much disturbed, became noisy, and struck with her wings at the intruder. When this brood could provide for themselves, a third nest was constructed, when the same part was repeated, and five young produced. These gone, she built a fourth nest at the farther end of the hedge from the house, but on going to feed her here one morning as usual, she appeared in great consternation on the bank, and the nest was found torn to pieces. A day or two afterwards she began the erection of a fifth, and, evidently for the sake of protection, this time chose a site quite close to the house. On this occasion four young got off in safety, after which we saw her no more. Thus seventeen young altogether were produced. Thirty persons at least witnessed what is here related, and fed the bird in her nest. She was indifferent to the presence of strangers.

Although thrushes are very destructive to our cherries and other fruits, the admiration in which their song is held generally pleads so strongly in their favour as to save them from destruction. In a friend's garden near Belfast, I have known a few of them to forfeit their lives by eating of the fruit, with which traps were baited for blackbirds. In the hothouse at this same place, the gardener one day caught a few of them regaling on his grapes. By several British authors, the *Helix nemoralis* is particularized as a favourite re-

past with this species, to which one author adds the *Hel. hortensis*, (Jour. of a Nat. p. 339,) and another the *Hel. lucida*, (Wern. Mem. Vol. iii. p. 180,) but its predilection for such food is far from being limited to these species. The beautiful *Helix arbustorum*, whose delicate shell is much more easily broken than either of the others, is an especial favourite; but this species is not by any means so generally distributed, particularly as the first mentioned. So eagerly is it sought for by the thrush, and probably also by the blackbird, that in some localities, when the fragments of shells they had broken first announced to me its contiguity, I have found it difficult to obtain specimens after their successful foraging.

In addition to the naked or externally shelless snails, insects, seeds, &c. the smaller *Helices* and other land shells form in winter a very considerable portion of the thrush's food. From a single stomach I have taken the *Helix cellaria*, *H. pura*, and *H. radiata*, in addition to *Limacelli*; and have similarly met with the *Bulimus lubricus*.

Redwing—*Turdus iliacus*, Linn.—The migration of this species, like that of the fieldfare, extends every winter over Ireland. In the north they generally arrive early in October, and remain until the beginning or middle of April; until the end of this month they delayed in the late spring of 1837. About Killaloe, I am informed that their average arrival is in the first week of November. In Kerry the redwing is reported to me as more common than the fieldfare, and in the north it likewise prevails numerically over this species. What has been said a page or two back on the haunts and occasional migration of the fieldfare equally applies to the redwing. In the severe winter of 1813 these birds were so reduced about Youghal that my informant killed several of both species with a stick thrown from the hand. In the north, I am told, this winter was remarkably fatal to birds generally.

In fine weather, and chiefly towards spring, a flock of redwings from a hedge or plantation sometimes delights us with a most agreeable concert, and a single bird occasionally utters a few melodious notes. A young friend resident at Cromac, near Belfast, who states that he has often heard single redwings sing their favourite tune, being early in the morning and forenoon, compares what he designates their song to that of the gray linnet, (Fringilla cannabina,) and remarks, that it is always in a low subdued tone; but from what we read of their melody in their native forests, they are called the

nightingale of Norway. * What is here mentioned seems to me nothing more than a repetition of their notes, or what bird-fanciers call "recording."

Of the stomachs of three redwings opened by me, one in January contained the remains of insects, two shells of *Helix cellaria* and one of *H. radiata;* two in December exhibited worms, vegetable food, (chiefly bits of grass,) remains of cloeopterous insects, and several *Limacelli;* one had in addition two of the *Bulimus lubricus*, a *Helix hispida*, and three of *H. rufescens:* of these shells some were perfect.

The common name of this species in the north is "*small* Felt," in contradistinction to the fieldfare, which is called "*big* or pigeon Felt."

The Blackbird—*Turdus merula*, Linn.—Is constantly resident, and very common in Ireland. The indigenous birds do not congregate, nor have I heard of flocks being ever seen on their migration from the north of Europe in any part of this country, as they appear in England. (See Selby's Ill. of Brit. Orn. Vol. i. p. 167, 2d. ed.) They are indeed stated to be more numerous about Tralee (co. Kerry) in winter than in summer, but their comparative scarcity in the latter season is attributed by my correspondent to the want of woods and thickets wherein to nestle. In the middle of June, I have heard the blackbird sing as early in the morning as a quarter past two o'clock. Thomas Walker Junior, Esq. of Belmont, Wexford, remarks in a letter to me, dated November 1836, that "last year numbers of people went to Mr Boxwell's of Lyngestown, to hear a blackbird in his shrubberries that clapped his wings and crew like a bantam cock. The circumstance was mentioned in several newspapers at the time." A similar fact is particularly described in the Magazine of Natural History, Vol. iv. p. 433.

In the north of Ireland, they are very destructive to fruits of almost every kind; even apples when fallen to the ground suffer much from them. To the earlier fruits in a friend's garden near Belfast they were so injurious in the autumn of 1833, that he had recourse to the common rat trap for their destruction. It was baited with currants, cherries, and early peas, and although exposed to view, † forty of these birds soon fell victims to it, and at the same

* Mag. Zool. and Bot. Vol. ii. p. 312.

† For many species, such as the magpie, hooded crow, &c. it requires to be concealed, the bait only being exposed to view.

time three thrushes shared a similar fate. When a cherry and pear were placed on the trap, the former was always prefered to the pear. All of these birds but one were caught by the neck, thus proving that it was in the act of eating the fruit they were secured.

On observing some plants in the Belfast Botanic Garden in January last, that had been much injured by birds, I learned on inquiry from the curator, that he had seen blackbirds tearing up different species of saxifrage, even in mild weather ; and I saw plants of the *Saxifraga pedatifida* and *S. tridactylites*, of which hardly a fragment remained, though each had formed a round clump at least a yard in diameter ; beside these, I remarked a similarly large patch of *Sax. hypnoides* untouched ; but this species, I was told, had elsewhere been attacked in the garden. In the present instance it was uninjured, apparently in consequence of forming a more unyielding mass, and, besides, its green surface foliage was so dense, that insects, &c. could hardly lodge beneath it. In our mountain glens I have in winter observed tufts of the rein-deer lichen (*Cladonia rangiferina*) lying strewn about, and inferred it was the work of either the thrush or blackbird in search of food, and, from what is just stated, I have little doubt of the correctness of my inference.

Ten of these birds killed in November, December, and January in various years, the contents of whose stomachs I inspected, presented haws, coleopterous and other insects and their larvæ, earth worms, *limacelli ;* &c. in three of them were land-shells, one alone producing six specimens of *Bulimus lubricus*, and ten of *Helix radiata*—the weather was mild when this bird was obtained, as it was when another filled with haws was procured.

I have seen several Irish specimens of the blackbird variegated with white, in some instances obviously the result of disease. Some of them had the legs and toes also marked with this colour.

The Ring Ouzel—*Turdus torquatus*, Linn.—Extends its migration in summer over this country. It has occurred to me in the mountains of the extreme north-west in Donegal, * and at Achil Head, one of the most westerly points of Connaught. In the counties of Clare, Kerry, Cork, Waterford, Tipperary and Dublin, it is stated by correspondents to be met with ; and I have seen it on Carlingford mountain in Louth, as well as in the chain of Mourne moun-

* J. V. Stewart, Esq. mentions in a letter to me, that he has twice seen the ring-ouzel during winter in this county.

tains, &c. in Down, and the range of Belfast mountains and others in Antrim.

Not later than the middle of April it appears about Belfast, generally departs towards the end of September, but occasionally remains until the middle of October. Here commonly one, but in some instances two pairs, frequent the wildest and most rocky parts of every glen or ravine that intersects the chain of mountains to the westward of the town. Within the distance of five or six miles there are as many of these localities resorted to by them, and here only are they found, except at the periods of their migratory movements. When walking in the Crow Glen, one of these haunts, on a summer evening in 1829, with my pointer dog some paces in advance, it was amusing to see two ring-ouzels pursuing him with their loudest cries, and approaching so near as to strike the air violently within a few inches of his head. Many an earnest and expressive look the dog gave me, as if desirous of advice in his extremity, but finding it all in vain, at length ran up to me, when they, nothing daunted, followed, and gave myself as well as two friends who were with me, the same salute, flying so near that we could almost have struck them with our hands. At the beginning of the onset, a female bird appeared, as if inciting the males forward, and remained so long as they were attaining the highest pitch of violence, and then like another heroine, retired to a commanding eminence to be "spectatress of the fight." Had they been a pair of birds protecting their young, or assuming similar artifice to the lapwing in withdrawing attention from their nest, in which the ring-ouzel is also said to be an adept, the circumstance would perhaps be unworthy of notice, but they were both male birds in adult plumage. The chase of the dog was continued a considerable way down the glen, and for fully fifteen or twenty minutes.

The nest of the ring-ouzel is placed on the ground, and generally on the side either of the shelving or precipitous banks of our mountain streams. One of those found by a relative before alluded to, was artfully set beneath an overhanging bank, whose mosses, of which materials the nest was composed, entirely concealed it from ordinary view.

The stomach of a ring-ouzel which I obtained in the middle of September last, exhibited a quantity of the larvæ of insects of several kinds. In the north this species is known by the name of "rock or mountain blackbird."

Golden Oriole—*Oriolus galbula*, Linn.—A bird described to

R. Ball, Esq. as having frequented a garden at Middleton, in the county of Cork, about the year 1817, he is satisfied must have been of this species. From the Zoological Journal (Vol. i. p. 590.) we learn that "a specimen of the Oriolus galbula, Linn. was shot in the county of Wexford in May last, (1823,) and is preserved in the Museum of the Dublin Society." In the spring of 1824, a female of this species was shot by a gentleman of my acquaintance near Donaghadee, in the county of Down. A male bird was soon afterwards seen about the same place. * Near Arklow, in the county Wicklow, I have been credibly informed that a specimen was procured about the summer of 1827. In a letter from Dr Robert Graves of Dublin, to a mutual friend in Belfast, dated November 1830, it is mentioned that a male golden oriole was shot in the previous summer by one of his pupils in a valley above one of the bays of the county Kerry.

The Hedge Accentor—*Accentor modularis,* Cuv.—Is very common throughout Ireland. It is not confined to the country, but also takes up its abode in the plantations about the squares, &c. in towns. From a narrow skirting of shrubbery before our house in Belfast, I have frequently heard its song trilled forth in mild days during winter. It has always seemed to me one of the most peaceable of birds, but that it can be moved to enmity, I have the testimony of a friend, who at the end of May once witnessed a fight between two of them, in which one was killed ; the victor after having slain his antagonist, twice or thrice uttered a song apparently of triumph, at the finale of which he each time flew at and struck his victim.

The bill and legs of the hedge accentor are occasionally in this country covered with large excrescences, like those described in the Magazine of Natural History, Vol. vi. p. 154. "Hedge sparrow" is the name applied to this species in the north. It is very agreeably treated of in the Journal of a Naturalist, p. 148.

VII.—*Dr Robert H. Schomburgh's description of Victoria Regina,* Gray. Plate XV.

The character of grandeur so peculiar to the productions of a tropical sun and a humid climate is highly developed in the object of the above description. The Holy Cyamus or Pythagorean Bean is said to have been derived from a plant closely related to the

* These are the same individuals alluded to by Mr Templeton, Mag. Nat. Hist. Vol. i. p. 405, New Series.

Nymphaceæ, (Nelumbium speciosum,) and not only that it is highly valued in India and China, and cultivated in large ornamental pots in the gardens and houses of the Mandarins, but it has been held in such high estimation that at last it was considered sacred. The description and illustrations which have been transmitted to us of this noble plant have raised the desire in many a botanist to see it in its native country. In my rambles through the West Indian Archipelago, I had frequently met the white water lily; but the remark of an eminent botanist, that these floating plants were entirely unknown on the continent of South America, did not make me expect to find a representative of that tribe, which, for the superior grandeur of its leaves, the beauty of its flowers, and its fragrance, may be classed amongst the grandest productions of the vegetable world. It was on the 1st of January this year, while contending with the difficulties nature opposed in different forms to our progress up the river Berbice, (in British Guiana,) that we arrived at a point where the river expanded and formed a currentless basin. Some object on the southern extremity of this basin attracted my attention. It was impossible to form any idea what it could be, and, animating the crew to increase the rate of their paddling, shortly afterwards we were opposite the object which had raised my curiosity. A vegetable wonder! all calamities were forgotten, I felt as botanist, and felt myself rewarded. A gigantic leaf, from 5 to 6 feet in diameter; salver-shaped, with a broad rim of light green above, and a vivid crimson below, resting upon the water. Quite in character with the wonderful leaf was the luxuriant flower, consisting of many hundred petals, passing in alternate tints from pure white to rose and pink. The smooth water was covered with them, and I rowed from one to the other, and observed always something new to admire. The leaf on its surface is of a bright green, in form almost orbiculate, with this exception, opposite its axis, where it is slightly bent up. Its diameter measured from 5 to 6 feet; around the whole margin extended a rim about 3 to 5 inches high, on the inside light green, like the surface of the leaf, on the outside, like the leaf's lower part, of a bright crimson. The ribs are very prominent, almost an inch high, radiate from a common centre, and consist of eight principal ones, with a great many others branching off from them. These are crossed again by a raised membrane, or bands at right angles, which gives the whole the appearance of a spider's web, and are beset with prickles; the veins contain air cells like the petiole and flower stem. The divisions of the ribs and bands are visible on the upper surface of the leaf, by which it ap-

pears areolated. The young leaf is convolute, and expands but slowly; the prickly stem ascends with the young leaf till it has reached the surface; by the time it is developed its own weight depresses the stem, and it floats now on the water. The stem of the flower is an inch thick near the calix, and is studded with sharp elastic prickles, about three quarters of an inch in length. The calix is four-leaved, each upwards of 7 inches in length, and 3 inches in breadth; at the base they are thick, white inside, reddish brown and prickly outside. The diameter of the calix is 12 to 23 inches, on it rests the magnificent flower, which, when fully developed, covers completely the calix with its hundred petals. When it first opens, it is white, with pink in the middle, which spreads over the whole flower, the more it advances in age, and it is generally found the next day of pink-colour. As if to enhance its beauty, it is sweet scented. Like others of its tribe it possesses a fleshy disk, and the petals and stamen pass gradually into each other, and many petaloid leaves may be observed which have vestiges of another. The petals next to the leaves of the calix are fleshy, and possess air-cells, which certainly must contribute to the buoyancy of the flower. The seeds of the many-celled fruit are numerous, and imbedded in a spongy substance. We met them hereafter frequently, and the higher we advanced the more gigantic they became. We measured a leaf which was 6 feet 5 inches in diameter, its rim $5\frac{1}{2}$ inches high, and the flower across 15 inches. The flower is much injured by a beetle, (Trichius. "Spec?") which destroys completely the inner part of the disk, we have counted sometimes from 20 to 30 in one flower.——*Extract of a letter from Dr Schomburgh to the Botanical Society of London, 17th October* 1837.

VIII.—*Contribution towards a knowledge of the Crenilabri (Cuv.) of Ireland, including Descriptions of Species apparently new to Science.** By William Thompson, Esq. Vice-President of the Natural History Society of Belfast. Plates XIII and XIV.

Crenilabrus tinca, and C. Cornubicus of Authors.

During the month of September 1835, which I spent at Bangor, on the coast of Down, I embraced the opportunity of examining these species in a recent state, as on every calm day they were in

* Read in part to the Zoological Society of London in June 1837, when specimens of all the species and varieties treated of were exhibited.

about equal numbers caught by lads, fishing from the rocks, who provided me with them.

This examination proved to my satisfaction that the *C. tinca* and *C. Cornubicus* are not distinct. The *colour* was as commonly described, in so far that the smaller specimens,* up to the length of six inches,—but not all under this size,—had on the body at the base of the caudal fin the black spot of *C. Cornubicus,* and the larger (*C. tinca*) wanted it; also, in the former being generally rather less brilliant in colour. Some specimens of an intermediate size, however, had the above-named spot of an obscure brown, suggesting, that this spot, originally black, may change gradually to this colour, and afterwards become obliterated,—an effect analogous to which, but to a much greater extent, takes place, according to Agassiz, in certain species of the *Salmonidæ,* The dorsal fin was similar in all, the spinous portion being marked alternately with longitudinal lines of green and red, and the soft portion red, with roundish green spots. In no other marking or distribution of colours was there any difference between them.

In not one of the many characters which come under the head of "*form*" was there any difference; the proportion of depth to length, denticulations of pre-opercle and teeth,† being similar in both. In these characters Mr Jenyns considers the *C. tinca* and *C. Cornubicus* differ, (Man. Brit. Vert. p. 398,) and from his great accuracy there cannot be a doubt that they did so in the specimens he examined; but it was, I presume, merely individual, as the differential characters he has assigned to each have occurred to me in the other.

Dr Fleming has brought these species together, (Brit. Anim. p. 208;) but we are not informed whether it was their general similarity, or an actual examination of specimens that led him to this conclusion.

Mr Couch remarks of *C. tinca* and *C. Cornubicus,* (Mag. Nat. Hist. Vol. v. p. 742,) that they differ in size, shape, colour, and habits. The three first differences have been already dwelt upon; but as to habits, I have only circumstantial evidence of their simi-

* In the collection of R. Ball, Esq. of Dublin, there are smaller specimens than any obtained at Bangor. Ten of these which I examined, and of which several were about $1\frac{1}{2}$ inch long, had the black spot conspicuous. The largest individual I have seen with this marking is $8\frac{3}{4}$ inches in length. It was procured on the northern coast of Ireland in the course of the Ordnance Survey.

† In two Bangor specimens of *C. Cornubicus* there are fourteen teeth in the lower jaw, a greater number than which is not possessed by any *C. tinca* I examined with them. The second row of teeth in the upper jaw is most apparent in the larger individuals, or, in other words, in *C. tinca.*

larity, by the supposed two species being taken in like quantity at the same time and place, and with the same bait. The *C. Cornubicus* is, under the name of "Corkwing," admitted by Mr Couch occasionally to want the black spot on the tail, (Mag. Nat. Hist. Vol. v. p. 18,) and is in this state considered by him to constitute the "Gibbous Wrasse" of Pennant. I, believing the *C. tinca* and *C. Cornubicus* to be identical, am inclined to think the gibbous wrasse is an accidental variety of *C. tinca*. The only thing like a specific difference that I can perceive in any of the characters included under "*form*" in the *C. gibbus*, is its greater depth, which is to its length as three to eight,—the average depth of *C. tinca* I find to be as three to nine, and the proportion varies,—though certainly, not so far as I have observed, according to any peculiarity of colouring, which is supposed to mark *C. tinca* and *C. Cornubicus*. The only difference between them in *colour* worthy of remark is, that *C. gibbus* has a "dusky semilunar spot *above* each eye," and the "pectoral fins marked at the base with transverse stripes of red." The *C. tinca* has a "dusky" mark *behind* the eye, which does rarely reach above it posteriorly, and amongst my specimens is one exhibiting three transverse stripes of red at the base of the pectoral fin, though all the others have but one stripe. Finding specimens of the *C. tinca* thus varying both in form and colour, I have not a doubt of the *C. gibbus* being an accidental variety of it, an opinion which is much strengthened by one individual only having ever occurred. With these views, it appears to me that the name of *C. tinca* should be used to designate the species, and *C. Cornubicus* and *C. gibbus* to mark its varieties. This species, in its ordinary aspect, and in that of the variety first mentioned, probably occurs on all the rocky parts of the Irish coast. I have seen specimens of both from a wide range of the northern, eastern, and southern shores.

Since the above was read to the Zoological Society, I have observed in the collection of my friend R. Ball, Esq. a fish named by him *C. gibbus*, which further serves to illustrate what has been just advanced. This specimen, which was taken at Youghal, is in length 8 inches, its greatest depth of body, exclusive of fins, 2 inches 7 lines,—the depth to length thus being as 1 to $2\frac{3}{4}$.—The fin rays are:

D. 16 + 9. A. 3 + 10. V. 1 + 5. P. 15. C. 15, and some short.

Its profile from the mouth to the commencement of the dorsal fin is even more vertical than represented in Pennant's figure of the gibbous wrasse, but here, instead of about the centre of this fin, is

its maximum height. From this point it falls away gradually to the tail, so that without including the dorsal fin, it does not present the depth relatively to the length described by Pennant. It is at the same time evidently his *C. gibbus*, and as evidently a mal-formed specimen of *C. tinca*. The original colour cannot now be accurately determined. It, however, wants the black spot of *C. Cornubicus*.

CRENILABRUS RUPESTRIS,* (Lutjanus rupestris, Bloch,) Jago's Goldsinny.

On the 10th and 13th of September 1835, I detected two specimens of this fish at Bangor, (co. Down,) amongst a number of the *C. tinca* and *C. Cornubicus* that were taken by boys fishing from the rocks, and using as bait a species of *Nereis*, apparently the *N. rufa* of Pennant. The following short description, drawn up from them when recent, may not be unacceptable, as the species is subject to much variation. Total length $4\frac{1}{2}$ and $4\frac{3}{4}$ inches; number of fin rays,

D. 17 + 9.	P. 14.	V. 1 + 5.	A. 3 + 8.	C. 15, well developed. Br. 5.
18 + 9.	15.	1 + 5.	3 + 8.	15.

Depth, equal to length of head; head to length of body nearly as 1 to 3; lateral line taking the precise form of dorsal profile. A row of pores appearing near the margin of the pre-opercle is continued forward over the eye. Behind its upper portion they are numerous, and irregularly disposed. Caudal fin covered with scales for two-thirds of its length from the base, none upon the dorsal and anal fins, their base being concealed by the scales of the body. Colour above the lateral line greenish-brown, below it changing gradually to pale green, the colour of the belly. Some irregular rows of orange spots occur longitudinally beneath the lateral line. Pectoral fins orange-yellow, which colour, with lighter shades of yellow, prevails in all the fins except the anterior portion of the dorsal, which from the first to the fourth ray is black; of this colour also are the upper margin of the eye and orbit, and a roundish spot at the upper edge of the tail. The centre of the scales being of a rather darker shade than their margin, gives to these specimens the appearance of being faintly lineated.

They seem to be identical with the species represented in the vignette to *C. luscus*, in Mr Yarrell's "British Fishes," (Vol. i. p. 301,†) though certainly not with the figure preceding the article,

* See Mr Selby in Mag. Zool. and Bot. Vol. i. p. 170.

† Mr Yarrell has subsequently informed me that this vignette was drawn from a specimen of *C. rupestris*.

nor with the description of *C. luscus*. The vignette differs from them in the mouth, which is placed too high, and is thus made unnaturally to resemble that of the *Trachinus vipera*.

Such were the observations made on these individuals in a recent state. In the month of February 1836, a specimen of the same fish, which was cast ashore at Bamborough, came into the possession of P. J. Selby, Esq., and formed the subject of a communication to this Magazine in the following August. Mr Selby here satisfactorily showed that it was the goldsinny of Jago, and *Lutjanus rupestris* of Bloch, but of a different species from the fish now known by the former name. My specimens had not the least indication of transverse bands on the sides, as described and figured by Bloch and Selby, nor was there any appearance of blue either in spots or lines upon the head. On examination of several individuals in Mr Yarrell's collection, I found no appearance of transverse markings. Nillson observes (Prod. Icht. Scand.) that the colour of the species is variable.

Crenilabrus microstoma, Couch MS. Small mouthed Wrasse. Plate XIV.

In the month of June 1836, a species of *Crenilabrus* was found on the beach of the county Antrim near Cairnlough, by my friend Dr J. L. Drummond, when engaged in collecting *Algæ*, and on his return to Belfast shortly afterwards, was kindly handed over to me. Being apparently undescribed, I at once drew up a minute account of it. When in London at the beginning of last summer, I ascertained that the same species had been met with in Cornwall by Mr Couch, who likewise considered it as new, and sent two specimens to Mr Yarrell, under the appropriate name of *C. microstoma*, a term, which, although unpublished, I consider it but fair to adopt, as Mr Couch had the priority in obtaining the species.

Its most prominent characters are: Body rather deep, mouth small, teeth few in number, and rounded or truncated at the summits; scales very large, those on the body concealing the base of the dorsal and anal fins, but none on these fins, anal fin with five or six spinous rays, ventral scale half the length of ventral fin, no blackish spots on body or fins.

D. 19 + 6. A. 6 + 7. P. 13. V. 1 + 5. C. 14. and some short = Br. 5.

Detailed description.—Length 3 inches; depth to entire length nearly as 1 to $3\frac{1}{2}$; first quarter of dorsal profile sloping moderately upwards, second flat, third turning rather suddenly downwards, and terminating with the dorsal fin, thence straight to the base of the caudal fin;* ventral profile very convex, sloping equally from

* Two specimens have this form; the other two have the dorsal profile fine-

both extremities to centre ; head occupying about one-fourth of entire length ; jaws equal ; mouth small ; lips double, much resembling those of *Labrus maculatus*, Bl. ; teeth strong, rounded or truncated at the summits, not serrated, a single row of twelve, rather uniform in size in the lower jaw ; two rows at the interior part of upper jaw, those of the outer row the larger, and seven in number, exceeding the teeth of the lower jaw in size, eyes large, more than their diameter distant from the snout, their distance from each other equal to their diameter ; a row of pores round the eyes, and some on the top of the head ; pre-opercle somewhat rounded at the base, ascending rather obliquely, strongly serrated, the denticulations extending half-way along its base, covered with small scales ; opercle somewhat triangular, covered with large scales ; scales on the body very large, smooth, and roundish at their free margins, three rows above lateral line, nine below it ; lateral line for two-thirds anteriorly placed high, at one-fourth of the depth, and the precise form of dorsal profile ; ventral central ; dorsal fin commencing at one-fourth of the entire length from snout, and continuing to near the tail, ending almost in a line with the anal fin, first ray very short, but they gradually increase to the twenty-fourth, which is longest, a membranous filament near the point of each spinous ray ; pectoral fin two-thirds the length of head, originating in the same line with the dorsal fin ; ventral fin beginning at about one-third of the entire length from the head, ventral scale about half the length of ventral fin ; anal fin originating nearly in a line with the fifteenth spinous ray of dorsal fin, and like it, when laid against the body, reaching to the outer short rays of the caudal fin, the dorsal rather exceeding the anal in length ; caudal fin obscurely rounded, and covered with scales at the base for one-fourth of its length ; scales of the body concealing the base of the dorsal and anal fins, but none on the fins.

Having had an opportunity in the present month (October 1837,) of looking over the collection of fishes obtained on the coasts of the counties of Londonderry and Antrim, during the progress of the Ordnance Survey, I had the satisfaction of seeing three specimens of the *C. microstoma*, which were liberally offered for my use by Captain Portlock, R. E., who at the same time suggested, that, if desirable, a drawing of one of them should be made by the gentleman attached as draughtsman to the Survey. To this kindness I am indebted for the drawing which accompanies the paper, the original

ly arched, and from the centre slope equally to each extremity; in these the ventral profile is rather less convex than in the former. The difference is probably sexual.

specimen having been too much dried up by exposure on the beach to be available for this purpose. Of these individuals, the first was obtained at the mouth of Lough Foyle, (co. Londonderry,) and the others in the small bay at Cairnlough, where the specimen was found by Dr Drummond. These are respectively $4\frac{3}{4}$, 5, and $5\frac{3}{4}$ inches in length, and those sent from Cornwall to Mr Yarrell, being about the same size, render it probable that they may be full grown. Their colour in spirits varies slightly, but the one which best retains its original markings may be described as having the sides of a deep salmon colour, with a dusky tinge; upper part of head purple; upper margin of eye and orbit blackish; stripes of violet and orange alternating below the eye longitudinally to near the mouth, where they become vertical; belly silvery white; some of the scales, including those on which the lateral line appears tinged, with a golden metallic lustre; dorsal fin violet blue at the base, with an orange stripe above; anal fin violet blue, striped with reddish orange; pectoral fin, brownish orange, with a dark stripe at its outer base, as in *C. tinca*; ventral fin diaphanous, tinged with orange; caudal fin dusky, towards the tip blackish. The fin rays of these three specimens are,

D. 19 + 7.	P. 14.	V. 1 + 5.	A. 5 + 7.	C. 13?	and some short = Br. 5.
19 + 6.	13.	1 + 5.	5 + 7.	13.	do.
20 + 6.	13.	1 + 5.	6 + 7.	15.	do.

In the number of spinous rays in the anal fin, this species agrees with a British *Crenilabrus*, the "Scale-rayed Wrasse" of Couch, (Mag. Nat. Hist. Vol. v. pp. 18 and 742,) which, however, differs from it widely in the form and number of the teeth, in the number of dorsal fin-rays, (21 + 8,) in having processes of imbricated scales between the rays of the dorsal and anal fins, and above all, in form, being "very much elongated." With the *C. exoletus*, which has a wide range over the European seas, it accords more nearly than with any other species I have seen described. The number of spinous rays in the anal fin is the same, but the *C. exoletus*, as described in detail by Risso, (Hist. Nat. l'Eur. Merid. T. iii. p. 329, ed. 1826,) differs from it in the number of rays in the dorsal fin, (20 + 9,) and in having scales on its base, in the teeth, (which are pointed,) and in having a large black spot on the caudal fin. Linnæus in his description of this fish, (*Labrus exoletus*, Syst. Nat. T. i. p. 479, ed. 13,) gives about the same number of rays in the fins as the Irish specimens possess; but the brevity of his description*

* "Pina dorsali ramentacea, corpore lineis cæruleis, pinna ani spinis 5. D. $\frac{18}{12}$. P. 13. V. $\frac{1}{5}$. A. $\frac{5}{7}$. C. 13."

precludes farther comparison, and at the same time it leaves us in doubt whether his *Labrus exoletus* and the *Crenilabrus microstoma* may not be identical.

CRENILABRUS MULTIDENTATUS, Nob. Ball's Wrasse. Pl. XIII.

Three specimens of a *Crenilabrus*, taken at Youghal in the summer of 1835, have been kindly sent me for examination by R. Ball, Esq. As in the instance of the last species, I cannot, by careful research, find any fish described with which they accord, I with some hesitation bring them forward as new, under the name of *C. multidentatus*.

Their chief characteristics are—Form elongated; mouth large and powerfully armed with pointed teeth; pre-opercle obscurely denticulated; scales of moderate size; ventral scale one-fourth the length of ventral fin; a blackish spot behind the eye, one at the base of the last ray of the dorsal fin, and a third at the lowermost portion of the tail.

D. 19+10. A. 3+8 P. 14. V. 1+5. C. 18. well developed = Branch. mem. 5.

The specimen from which the following description is drawn up is in length $2\frac{1}{3}$ inches; depth $\frac{1}{4}$ of the entire length, and less than the length of head; head to entire length is 1 to $2\frac{3}{4}$; upper jaw the longer; lips prominent and double; mouth large; teeth numerous and large, two rows in the upper, one in the lower jaw; number in lower twenty-six. The five hinder ones in each side equal, thence forward to the centre eight unequal, of which the two in front are considerably the largest, and curve inwards; in the outer row of upper jaw twenty, the four hinder on each side of equal size, next six increasing somewhat gradually to the centre; no serration visible with the highest power of a lens on any tooth; the larger teeth in both jaws sharp and curving inwards. This number and arrangement of teeth relatively to size, the same in two out of three specimens. Eyes of moderate size, distance between them equal to their diameter; a row of pores appears above each eye, extends back to the pre-opercle, and thence through its entire length a short way in from the margin; pre-opercle ascending obliquely, obscurely denticulated, especially towards the base; covered with small scales; opercle covered with large scales; scales of the body of moderate size, somewhat rounded at their free margins, strongly marked with concentric striæ; lateral line takes the form of dorsal profile, and extends between one-third and one-fourth of the entire depth below it; ventral central. Dorsal fin commences at one-third of the entire length, and ends considerably nearer the tail than the anal

fin, its soft portion one-third higher than the spinous ; a membranous filament from near the point of each spinous ray. Anal fin begins nearly in a line with the seventeenth spinous ray of dorsal fin, its distance from the caudal fin equal to its entire length. Pectoral fin rounded, more than half the length of head, originates a very little in advance of dorsal fin, and about one-fourth of its length in advance of ventral fin, placed low, its distance from the latter equal to its own base. Ventral scale about one-fourth the length of ventral fin. Caudal fin rounded. The central rays rather disproportionately long, one-third of its base thickly covered with scales, of which there are none in the dorsal and anal fins.

Colour of the specimen in spirits, very pale greenish brown over the back, olive green on the sides, becoming paler beneath ; sides with darker longitudinal bands throughout ; from dorsal to ventral profile above the lateral line, they take its form, below it they are straight. Three blackish spots, one on the pre-opercle behind, and rather below the centre of the eye, a second on the body at the base of the caudal fin, and at its lowermost portion, and the third at the base of the last ray of the dorsal fin.

It is perhaps worthy of particular mention, that the specimens under consideration have been critically compared with Risso's descriptions (ed. 1826) of all the numerous species of *Crenilabri*, and also with the *Labri*, in consequence of the pre-opercle being but obscurely denticulated, inhabiting the Mediterranean, as well as with all those described under the genera Lutjanus and Labrus, in the general works of Bloch and Schneider.

Explanation of Plates.

Pl. XIII. Crenilabrus multidentatus, natural size.

XIV. C ——— microstoma. a. scale nat. size.

REVIEWS AND CRITICAL ANALYSIS.

Dr Lardner's Cabinet Cyclopædia. Natural History. Natural History and Classification of Birds. By W. Swainson, Esq. A. C. G., F. R. S. L., &c. Vol. II. London, Longman and Co. 1837.

Since the publication of the seventh Number of the Magazine of Zoology and Botany, in which our review of this interesting department of the Cabinet Cyclopædia embraced the whole of the volumes then published, another has appeared, being the second of the ornithological series, and which, as bringing to a conclusion the author's observations and views on the natural history and arrangement of birds, is too important not to demand our early notice and attention. Of this volume we can venture to speak in terms of approval similar to those we have bestowed upon the previous labours of the distinguished author. It is a companion worthy to stand by its predecessors, exhibiting, wherever Mr Swainson has allowed himself to go into detail, the same luminous and philosophic views in regard to natural arrangement, and that thorough acquaintance with his subject, even to the minutest analytical detail, which proclaims him to be one of the first ornithologists, we may add naturalists, of the present age. We cannot however but regret, that the limit to which he has been restricted has obliged him to compress into one volume, matter sufficient to have occupied two, for with the exception of the Insessores, the other orders are comparatively left in an unfinished state; in some of them the great or primary division alone being glanced at. We undoubtedly are aware, that, with our present limited knowledge of the constituent parts of these orders, it is impossible to determine or arrange the whole of the inferior groups in a natural series, but we feel convinced that he could (had space permitted) have added considerably to that valuable information he has conveyed. Much, therefore, it is evident, remains to be done to work out and determine the minor natural groups of the Natatorial, Grallatorial, and Rasorial orders, but the impetus has

been given, the path pointed out; and we confidently hope to see the various circles of these orders as fully and beautifully elucidated, either by the author, or the labours of other ornithologists who work in the same vineyard, as those of the orders Raptores and Insessores.

By those who are opposed to the Macleayan theory, or who have not studied natural history in the analytical mode pursued by Mr Swainson, it may be objected, that he has made his arrangement subservient to his theoretical views; that is, he has, to prove the correctness of that theory, introduced and forced forms into situations they actually do not, or at least which he cannot satisfactorily prove, they occupy in nature. Now this we think is not the case, and that no systematist is less guilty of such a charge. We have punctually followed him pretty extensively in that analytical detail which he pursued, and so strongly recommends, and we must confess, it is only in a very few instances we have been obliged to differ from him in our conclusions.

This volume, like the rest of the work, is well got up, and is illustrated with a profusion of wood-cuts, all of which are intimately connected with the subject matter, and tend to elucidate what it is often very difficult to make intelligible or clear by mere verbal description. The fourth or concluding part of the volume is a "synopsis of a natural arrangement of birds," in which the reader will find the whole of the acknowledged genera up to the present time, arranged under the different orders to which they belong. In this synopsis, "some slight alteration in the arrangement of the groups from what they appear in the foregoing part" will be observed; but this, he observes, "has resulted from further analysis, and by incorporating our researches up to the latest time."

Mr Swainson, it will be recollected, concluded his last volume with observations on the Insessorial or perching order, its primary divisions, and the analogies of the dentirostral tribe. The present commences with the enumeration of the families of this prominent division, viz. the *Laniadæ*, the *Merulidæ*, the *Sylviadæ*, the *Ampelidæ*, and the *Muscicapidæ*; the three last forming the aberrant divisions, the *Laniadæ* and *Merulidæ*, the typical and subtypical groups. The family of the *Laniadæ*, with which he begins his exposition, from the rapacious habits of its typical representatives, and strongly notched bill, he justly considers as analogous to, or representing the Raptores. He finds it composed of the five following minor divisions or sub-families, viz. *Tyranninæ* or tyrant shrikes; *Ceblepyrinæ*, or caterpillar-eaters; *Dicrurinæ*, or drongo shrikes;

Thamnophilinæ, or bush shrikes, and *Lanianæ*, or true shrikes. The affinities of these various groups, and the natural series in which they appear to follow each other, are then traced throughout their various ramifications, with a degree of skill which we cannot but admire, and which, so far as we have followed him in his analysis, we have proved to our own conviction to be correct. In concluding his account of this family, he offers a few pertinent remarks on two forms which have generally been supposed to come within its precincts, viz. genus *Vanga*, Buff. and genus *Platylophus*, Sw.; but which he now would place in the family of the Corvidæ, belonging to the conirostral tribe, believing that the resemblance they bear to the shrikes is merely one of analogy, and not of affinity. In this view, particularly as regards the New Holland Vangæ, we are inclined to concur, having remarked the affinity that subsists between them and the genus *Barita*, a group which undoubtedly belongs to the corvine family. Of Platylophus we speak with more diffidence, not being acquainted with its habits and economy. The analogies of the sub-families of the shrikes to the tribes of Perchers are thus stated:—

Dentirostres.....Lanianæ
Conirostres.....Thamnophilinæ
Scansores.....Dicrurinæ
Tenuirostres.....Ceblepyrinæ
Fissirostres.....Tyranninæ.

The family next brought under consideration is that of the *Merulidæ*, "the most numerous as well as the most diversified of the toothed-bill tribe," and which he also considers in its typical groups as the most perfect in its organization, possessing advantages in the structure of the bill, feet, &c. which are either denied to, or but partially enjoyed by, the rest of the Dentirostres. This family, from the modifications of the typical characters as they exist in the blackbird, fieldfare, and other true thrushes, as well as the analogies its members bear to other tribes, is again divisible into the five following sub-families, viz. *Merulinæ* and *Myiotherinæ*, constituting the typical and sub-typical groups, *Brachypodinæ*, *Oriolinæ*, and *Crateropodinæ*, the three aberrant. This exposition of the peculiarities and relations, both of analogy and affinity of these groups, though already so fully discussed in the second volume of the Northern Zoology, contains much additional and interesting matter; but as our limits will not permit us to follow him through all his details, we must restrict our observations to the mode in which he considers the union of the various groups of this family with each

other, as well as with the other divisions of the tribe is effected. Commencing, then, with the short-legged thrushes, or sub-family *Brachypodinæ*, he considers that its union with the shrikes or *Laniadæ* is through *Trichophorus*, Temm. or bristle-necked thrushes, a genus limited to the warmer latitudes of Western Africa and Oriental India, and which appears to pass almost immediately into the Drongo shrikes. In addition to the typical genus *Brachypus*, under which are several sub-genera, this sub-family also contains, *Micropus*, Sw.; *Dasycephala*, Sw. also an American form is a fourth, and is so named from the stiff bristly feathers which surround the forehead and crown; and the fifth is *Cinclus*, Bechst. to which genus our well known dipper belongs. He concludes this chapter with a variety of interesting observations on the analogies of the *Myiotherinæ*, with the other portions of the *Merulidæ*, illustrated by a series of tables, which we recommend the student to compare with the types of the various forms before him. Many of these analogies will, no doubt, at first sight appear to be indistinct and far-fetched; but as we have before observed, it only requires patient and minute investigation to be convinced of the general correctness of our author's views, and of that law of representation or resemblance which appears to pervade all nature, and which, though less striking and apparent, as might be expected, in groups or in individuals far removed from each other, is no less true than that which is readily admitted to exist between those which are propinquant.

The next chapter treats of the family of the *Sylviadæ*, a numerous assemblage of birds, mostly distinguished by their small size and delicate structure. The groups of this extensive division, Mr Swainson observes, "are found over all the habitable regions of the globe, and are destined to perform an important part in the economy of nature. To them appears intrusted the subjugation of those innumerable minute insects which lurk within the buds, the foliage, or the flowers of plants, and thus protected, escape that destruction from swallows (we may add flycatchers) to which they are only exposed during flight." The natural and primary division of this family is into the sub-families *Sylvianæ* and *Philomelinæ*, the typical groups, and the *Saxicolinæ*, *Motacillinæ*, and *Parianæ*, which form the aberrant divisions. Commencing with the *Motacillinæ*, which collectively represent the tenuirostral type of the perchers, and are the most aberrant section of the family, he points to the genera *Motacilla*, Linn., and *Icteria*, Vieil.; *Trichophorus*, Temm.; and *Phyllastrephus*, Sw. The passage from the short-legged thrushes to the orioles, *Oriolinæ*, he supposes to be through the

palm-thrush, genus *Dulus*, Vieil. This beautiful group is distinguished by the prevailing yellow colour of its typical species, as exemplified in *Oriolus galbula*, &c. In it we find the regent oriole, *Sericulus chrysocephalus*, Sw. and the *Oriolus paradiseus*, Temm., as well as the lovely *Irena puella* of Horsf. By the regent bird, distinguished from its congeners by the length of the tarsi, the way is prepared for a direct passage to the next sub-family, *Crateropodinæ*, a group distinguished from the other thrushes by their long and powerful legs and feet, their short wings, and, generally speaking, sombre plumage. Of this group more requires to be known before its typical forms can be precisely defined, but the near approach of some of its members to the *Brachypodinæ* tends to prove the circular disposition of the three aberrant groups. Of the true thrushes or *Merulinæ*, which exhibit the typical perfection of the whole family of the Merulidæ, he points out the genera *Merula*, Ray.; *Orpheus*, Sw.; *Petrocincla*, Vig.; and *Chætops*, Sw. as four of the prominent groups. Like other pre-eminently typical forms, the true thrushes (*Merula*) are found in all parts of the world, while the mocking-thrushes (*Orpheus*,) which lead to the *Crateropodinæ*, are confined to the American Continent. By the rock-thrushes (*Petrocincla*) he finds a passage through *Myophonus* and other forms to the sub-family *Myiotherinæ*. In this division, which represents the sub-typical or dentirostral type of the family, we have the beautiful genus *Pitta* distinguished by the short tails and elongated legs of its members, with a richly varied plumage, in which blue, red, and brown predominate. *Myothera*, Ill. is a third genus restricted to tropical America, and in its own circle analogous to the *Thamnophilinæ* and *Budytes*, Cuv. answering to our wagtails as typical forms, nearly allied to which are the members of the party-coloured genus *Enicurus*, Temm. an Indian group, succeeded by *Anthus*, Bechst., which, placed as it were at the extremity of the *Dentirostres*, leads immediately to the family *Alaudinæ* in the circle of the *Conirostres*. A fourth form, intermediate, as he thinks, between *Anthus* and *Motacilla*, is his *Lessonia erythronotos*, a Chilian bird, but of whose affinities we have not ourselves had an opportunity of judging. He enters the next sub-family *Parianæ* by the *Seiurus auricapillus* (golden crowned thrush of the earlier writers,) considered as a subgenus of *Accentor*, Bechst. the members of which, he remarks, "stand at the confines of that group which contains the most scansorial warblers of the family," and which station must be conceded to *Parus*, and its nearly allied congeners. The other groups which complete the

circle of the *Parianæ*, are the genera *Parus*, Linn., *Sylvicola*, Sw., *Setophaga*, Sw., and *Trichas*, Sw. Upon each of them he digresses at considerable length, proving, we think satisfactorily, the correctness of his views by a minute analysis of their contents, and showing that their analogies or the law of representation exists in as great perfection in the sub-generic or lowest groups, as they do in those of a higher value. From the *Parianæ* he passes to the Sylvianæ by the intervention of the gnat snappers or genus *Culicivora*, Sw. an American group, with a bill intermediate between *Setophaga* and *Sylvia*, to which latter genus the pre-eminently typical groups of the whole family *Sylviadæ*, it directly leads. Besides *Sylvia*, Lath. under which he ranks Regulus, Sylvia, Acanthiza, and Cyanotus, as subgenera, he includes in it *Malurus*, Vieil. the subgenera of which are also given in the Synopsis, *Orthotomus*, Horsf: and perhaps *Praticola*, Sw. a remarkable Australian form, but whose economy and habits require to be better known before its real station can be precisely established.

The *Philomelinæ*, typified by the nightingale and its immediate congeners. form the fourth subfamily. In addition to the genus *Philomela*, it contains *Curruca*, Bechst. under which he has also included the genus *Salicaria*, Selb. represented by the hedge and reed warblers, which we think upon investigation will be found entitled to rank as a generic group, and not as a subgenus of *Curruca*, the last being more likely to prove a subgeneric form only of *Philomela*. The other members are classed under the generic heads of *Phœnicura*, Sw. *Bradyptetus*, Sw. and *Agrobates*, Sw. the last typified by the Sylvia galactotes of Temminck. From *Phœnicura* the passage to the robins, *Erythaca*, Sw. which introduces us to the fifth subfamily or Saxicolinæ, is easy. In this last division, we also find the genera *Saxicola*, Bechst. *Petroica*, Sw. *Thamnobia*, Sw. and *Gryllivora* Sw. the types of which will be found in the synopsis under their respective generic heads. The union of all the subfamilies of the Sylviadæ is there stated as being effected by the genus Gryllivora, just mentioned, uniting with that of Enicurus, which, as will be remembered, stands on the confines of the Motacillinæ, with which he commenced his analysis of the family.

The *Ampelidæ* or chatterers, forming the fourth great division or family of the Dentirostral tribe, is next brought under review. He remarks, "it is a family more remarkable for beauty and singularity, than for its extent; hence much difficulty has arisen in making out the subordinate divisions and successions of its groups." He has, however, pointed out what he conceives to be the types of the

subfamilies of which it is composed, suggesting, at the same time, that the accuracy of two of these, viz. *Leiotrichanæ* and *Pachycephalinæ*, remain to be further tested, by extended observation and analysis. Tropical America is the habitat of the typical species, the *Bombycilla garrula*, or waxwing, being the only European representative of the family. They are, he remarks, distinguished from all others of the *Dentirostres*, by the enormous width of their gape, which in many extends beyond the eye, and in some is nearly as wide as that of a goatsucker. The particular use of this structure is at once explained by the nature of their food. They live almost entirely on soft berries and small fruits, which, from being swallowed whole, naturally require a very wide passage to pass down the throat." The subfamilies are designated as follows, *Leiotrichanæ*, *Pachycephalinæ*, which he afterwards changes in the Synopsis to *Vireoninæ*, *Bombycillinæ*, *Ampelinæ*, and *Piprinæ*, the three first forming the aberrant, the two last the typical divisions. Under Leiotrichanæ, he places *Leiothrix*, Sw. and *Pteruthius*, Sw. each represented by a single species, natives of India,* and whose direct affinities appear to have been mistaken or overlooked by their first describers, the one having been included in the genus *Parus*, the other described as a species of *Lanius*. A minute examination of these birds is, however, sufficient to show that their appropriate station is within the limits of the present family. In *Vireoninæ*, he places the genera *Vireo*, Vieil. *Pachycephala*, Sw. and another which he now calls *Ptilochlorus*. In *Bombycillinæ*, the last of the aberrant division, and representing the *Fissirostres*, he places *Bombycilla*, Briss., *Phibalura*, Vieil., and *Procnias*, Hoff. The subfamily *Ampelinæ*, containing the true or typical chatterers, are united to the *Bombycillinæ* by means of the genus *Calyptomena*, Raff. *Chrysopteryx*, Sw. follows, and is succeeded by *Casmorhynchus*, Temm. and *Ampelis*, Linn. the first distinguished by the curious appendages with which the heads and throats of some species are furnished, the second, for the surpassing beauty and richness of the plumage of its members. The fifth form or genus of the subfamily is represented by *Rupicola*, Briss. rock manakin, which leads directly to *G. Phœnicircus*, Sw. (the Ampelis carnifex of Linn.) by which he enters the Piprinæ or subtypical group of the family, generally known by the name of manakins, from the diminutive size of most of the species. Under this division he includes *Pipra*, Linn. *Calyptura*, Sw. and *Pardalotus*, Vieil.

* The valuable collections of birds sent from Nipaul by Mr Hodgson contain a second species of Leiothrix.—Ed.

The family of the Muscicapidæ, which closes the circle of the *Dentirostres*, is next brought under review, and after a few appropriate observations upon the distinctive characters of its typical members and their peculiar habits, he proceeds to trace its primary divisions, referring the reader to a separate work upon the subject, entitled "the Natural History and Arrangement of the *Muscicapidæ*, or Fly-catchers, in which"* "the contents of the whole family, together with the singular and beautiful analogies presented by the minor groups, even in their most minute details, are fully illustrated." These primary divisions or subfamilies are represented by the five following types, *Eurylaimus*, Horsf. *Muscicapa*, Linn., *Fluvicola*, Sw., *Psaris*, Cuv., and *Querula*, Vieil., under each of which he mentions the various genera and subgenera of which they are composed. The genera composing the *Eurylaminæ*, are stated to be *Eurylaimus*, *Cymbirynchus*, Vig., *Platystomus*, Sw., *Psarisomus*, Sw., and *Serilophus*, Sw.; but we think that further investigation is required to determine the exact value of each of these, and whether they are all really entitled to stand as subgenera, or even to attain that rank. By *Serilophus*, the crested or rasorial type, and its apparent analogy to *Bombycilla*, he finds a link of connection with the Ampelidæ. The numerous subfamily *Muscicapidæ*, embracing the ordinary fly-catchers, contains the genera, *Todus*, Linn., *Muscicapa*, Linn., *Megalophus*, Sw., *Monacha*, Horsf. and Vig., and *Rhipidura*, Horsf. and Vig. Upon the two first of these the typical groups, and which are divisible into assemblages of lower value, he enters at considerable length, detailing the characters of the subgenera, and exemplifying the circles of the two genera, and their analogies by a table and diagram.

Under the *Fluvicolinæ* or water-chats, he enumerates, as types of generic groups, *Scisura*, Horsf. and Vig., *Fluvicola*, Sw., *Perspicilla* Sw., *Alecturus*, Vieil., and in the synopsis *Gubernetes*, Vig., which last leads to, if it does not actually enter the subfamily *Psarianæ*, of which only two generic forms, allowing *Gubernetes* to remain among the *Fluvicolinæ*, are at present recognized by *Psaris*, Cuv., and *Pachyrynchus*, Spix. The fifth subfamily or *Querulinæ*, represented by *Querula*, Vieil., and *Lathria*, Sw., closes the circle of the *Muscicapidæ*; and although these birds evince a strong analogy, indeed affinity to the chatterers, we believe the present to be their true station, in which they form that prominent link which immediately connects the Ampelidæ with the Muscicapidæ.

From the Dentirostral he now passes to the Conirostral tribe,

* This will form an early volume of the "Naturalist's Library." The drawings are now in the hands of the engraver.—Ed.

" the most highly organized of all those which form the grand division or order of perchers, of which in consequence it is preeminently typical. The distinguishing characteristic of the tribe is the conic-shaped form of the bill, which is also less decidedly notched than in the members of the dentirostral, while the full and perfect development of the feet at once distinguishes it from the three aberrant circles of the *Fissirostres*, *Tenuirostres*, and *Scansores*.

Its primary divisions or families he considers to be the *Corvidæ* and *Sturnidæ*, forming the two typical groups; the *Buceridæ*, *Musophagidæ*, and *Fringillidæ*, the aberrant, although the mode in which these three unite to form a circle within themselves, is not yet discovered. The *Buceridæ* are described as a small, and, in a great measure, an isolated family, as no immediate link with other groups has yet been satisfactorily made out. It is at present restricted to a single genus, which, however, contains several species. He makes it the *Fissirostral* type, in consequence of the peculiar habit its members exhibit, viz. that of throwing up their food in the air, and catching it before it is swallowed,—an analogy in accordance with the habits of the Pelicanidæ, also a fissirostral type in its own order. The *Corvidæ*, or crows, which he deems the nearest allied to the last, though several intervening forms are wanting to complete the connection, is not only the family typically representing the great order *Insessores*, but in the genus *Corvus* of its subfamily *Corvinæ*, or true crows, " exhibits the greatest perfection, and the most varied powers with which nature has invested this class of animals." The natural series of its subordinate divisions is indicated by arranging the genera under the subfamilies *Frigillinæ*, *Corvinæ*, *Garrulinæ*, *Crypsirinæ*, and *Coracinæ*, the disposition of which, under their appropriate genera and subgenera, will be found on a reference to the synopsis at the end of the volume. We observe that he very properly excludes from this family the genera *Epimachus*, *Coracias*, and *Gracula*, which by other authors were considered to belong to it; for ourselves, we had long since placed the *Rollers* among the *Fissirostres*, in near connection with *Eurystomus* and other birds belonging to the family *Meropidæ*. The *Sturnidæ*, or starling group, he further divides into the minor divisions of *Sturninæ*, *Lamprotorninæ*, *Scaphidurinæ*, *Icterninæ*, and *Agelainæ*. The *Scaphidurinæ*, so named from the structure of the tail, which is boat-shaped or concave on its upper surface, contains those large glossy crow-looking birds disposed under the genera *Scaphidura*, Sw., *Quiscalus*, Vieil., and *Scolecophagus*, Sw., all natives of America. He also places in it that splendid bird the *Astrapia gularis* of Vieil-

lot, which some writers, from the richness of its plumage, had associated with the birds of Paradise, but its affinities clearly show its station to be in that family whether it remains in the present group, or is removed to that of the Lamprotorninæ, the subfamily which immediately follows, and the members of which, as contained in the genera *Lamprotornis* and *Ptilonorynchus*, are remarkable for the metallic lustre of their plumage. The *Sturninæ*, or true starlings, succeed the Grackles or Lamprotorninæ; under this denomination, he includes the genera *Sturnus*, Linn.; *Pastor*, Temm.; *Graculas*, Auct.; *Acridotheres*, Vieil.; and *Oxystomus*, Sw. The passage from this to the *Agelainæ*, or maize-birds, is effected by the *Sturnella vulgaris*, a well-known species. And under this subfamily are also included the genera *Agelaius*, Vieil.; *Leistes*, Vig.; *Dolychonyx*, Sw,; and *Molothrus*, Sw.; to which genus that remarkable bird the Cowpen bunting belongs. The last subfamily, or *Icterinæ*, are distinguished from the preceding by their arboreal habits and shorter legs. It contains the genera *Cassicus*, Daud.; *Zanthornis*, Cuv.; *Icterus*, Cuv.; and *Chysomus*, Sw.; all of which, as well as the genera of Agelainæ, are natives of the American Continent. To enter the family of the Fringillidæ we are prepared by the small conic-billed species of the *Agelainæ*, some of which, as our author observes, "so closely resemble finches, that only an experienced naturalist can point out the distinction. The primary divisions, or subfamilies, are considered to be the *Coccothraustinæ*, *Tanagrinæ*, *Fringillinæ*, *Alaudinæ*, and *Pyrrhulinæ*, the two first the typical, the remaining three the aberrant groups. Under the *Coccothraustinæ*, of which our hawfinch is an example, he arranges "*Coccothraustes*, Briss. *Ploceus*, Cuv: *Tiaris*, Sw., *Carduelis*, Briss., and *Linaria*, Briss. In treating of the Tanagers, "the most diversified and numerous of all the groups in this comprehensive family," he states the difficulties which at present exist in making an arrangement, strictly according with their natural affinities. He thinks, however, that the following are likely to represent the genera or minor groups of which it is composed, viz. *Tardivola*, Sw., *Tanagra*, Linn., *Phænisoma*, Sw., *Nemosia*, Vieil., and *Aglaia*, Sw. Of the sub-family Fringillinæ he considers *Fringilla*, Linn, and *Emberiza*, Linn., to be the typical groups, the aberrant being represented by *Pyrgita* or *Passer*, Auct. *Plectrophanes*, Meyer, and *Agrophilus*, Sw. Though he adds that "some uncertainty hangs over the latter, as to its real value," and whether it may not ultimately prove to be only a sub-generic type.

For the next sub-family, *Alaudinæ*, we are prepared by the genus

Plectrophanes, which resembles *Emberiza* in the shape of the bill, and the larks in the structure of the feet. It contains the following genera, *Alauda*, Linn. *Calendula*, Linn. *Agrodroma*, Sw., *Macronyx*, Sw., and *Certhilauda*, Sw. We must observe, that the characters of *Agrodroma*, which he considers the insessorial or pre-eminent type, approach so near to those of others, that its type, *Anthus rufescens*, and the other two species, have hitherto always deen arranged with the Pipits. He enters the *Pyrrhulinæ* by means of the genus *Pyrrhulauda*, Sw., a small group, belonging to tropical India and Africa, which indicates an affinity to both sub-families, in the form of its bill and feet ; under this division he also places the genera *Pyrrhula*, Auct. *Psittirostra*, Temm. *Hæmorhous*, Sw., and *Loxia*, Linn. It also seems probable, that the bird figured by Mr Gould under the title of *Paradoxornis* will enter among the bullfinches, whose circle requires to be further analyzed.

The fifth and last family of the Conirostres, is that of *Musophagidæ*, or plantain-eaters, so named from the genus *Musophaga*, which contains the largest birds of the division, though, as he adds, "it is by no means clear that it is the real type of the whole family." That this is the proper station of the birds he has here assembled, we are strongly of opinion, though their connections at present with the other Conirostral families is not so prominent or well marked as might be wished for or expected. Three sub-families only appear to be recognized, under the titles of *Phytotominæ*, *Colinæ*, and *Musophaginæ*. They are remarkable for the varied form and structure of their feet ; in some, as the Colies, the whole of the toes, four in number, are brought forward,—a provision in beautiful accordance with the habit they have of suspending themselves from the branches of trees, head downwards. In the Touracous, *Corythaix*, the outer toe is partially reversible, or capable of an outward direction, in *Hyrens* the toes are only three, while in *Phytotoma* they are four and arranged like those of the finches. He then traces an analogy between the *Corythaix gigantea*, and the *Buceros galeatus*, through which he conceives the union of the two families is effected.

(*To be continued.*)

PERIODICALS—*British.*

Loudon's Magazine of Natural History, New Series. September and October 1837. (Continued from page 360.)

I.—*Zoology.*

Observations on the opposable Power of the Thumb in certain Mammals, considered as a zoological character; and on the natural affinities which subsist between the Bimana, Quadrumana, and Pedimana, by W. OGILBY, Esq. p. 449 and 517.——Description of the membranes of the Uterine Fœtus of the Kangaroo, by R. OWEN, Esq., p. 481.——WATERHOUSE on the Palm Squirrel, p. 496.——WEISSENBORN on the Habits and Economy of the common Fox, p. 507.——Some remarks on the Plumage of Birds, by EDW. BLYTH, Esq., p. 477.——Notes on the Pern or Honey Buzzard, by the same, p. 536.——G. R. GRAY on a new Subgenus, and some remarks on birds belonging to the family Laniadæ, p. 487.——GOULD on some species of the genus Motacilla of Linnæus, p. 459.——Characters of a new Form in the Fringillidæ, with a description of the only species yet referable to it, by ANDREW SMITH, M. D. p. 535.——Letter from Dr CLARKE of Ipswich to WILLIAM YARRELL, Esq. noticing the recent occurrence of the Fry of a species of Hemiramphus on the coast of Suffolk; with some additional observations by Mr YARRELL, p. 505.——Description of a new British Wasp, with an account of its Development from the Larva to the Imago, by W. E. SHUCKARD, Esq. p. 490.——Illustrated Zoological Notices, by EDW. CHARLESWORTH, viz. on the Argonaut, p. 526; on the head of a Crocodile, (? Stenæosaurus) lately discovered at Whitby, p. 532; and on a Form of cephalopodous Shells connecting the genera Nautilus and Ammonites, p. 533.——STUTCHBURY's Additional Remarks on the genus Cypræcassis, p. 470.——J. E. GRAY on a new genus of Land Shells, p. 484.——Miscellaneous Zoological Notices, by J. B. HARVEY, p. 473.

There is no botanical communication in either number, but the usual supply of short notices. We have to thank the editor for the favourable notice he has been pleased to take of our labours; the Magazine of Zoology and Botany was neither begun in rivalry, nor from a wish to injure in any way the Magazine of Natural History, for the plan and object of the two works were at first essentially different, and there is still a specific distinction, which a careful reader will be at no loss to perceive.

PERIODICALS.—*Foreign.*

Annales des Sciences Naturelles. Zoologie, MM. AUDOUIN et MILNE-EDWARDS. *Botanique,* MM. AD. BRONGNIART et GUILLEMIN. Crochard and Co. Paris. Fevrier et Mars 1837. (Continued from p. 361.)

1.—*Zoology.*

Fevrier.—*Etude microscopique de la* Cristatella mucedo, *Cuv.* par M. TURPIN.—*Recherches sur les Polypes d'eau douce des genres* Plumatella, Cristatella *et* Paludicella, par M. P. GERVAIS. Of these interesting papers we shall, on a future occasion, give a very full analysis.——*Recherches expérimentales physico-physiologiques sur la température des tissus et des liquides sur animaux,* par MM. BECQUEREL et BRESCHET.——*Experiences sur le mécanisme du mouvement ou battement des artères,* par M. FLOURENS.——*Description du double système nerveux dans le* Limneus glutinosus, par A. J. VANBENEDEN.——*Note sur les ossemens fossiles des terrains tertiares de* Simorre, *de* Sanson, *etc., dans le département du Gers, et sur la découverte récente d'une mâchoire de Singe fossile,* par M. LARTET.——*Description d'une troisième espèce vivante de la famille des Crinoides, servant de type au nouveau genre* Holopus, par M. D'ORBIGNY.——Tabulæ synopticæ Scincoideorum, par M. COCTEAU.——*Description d'une nouvelle espèce du genre* Dreisseina, par M. J. VANBENEDEN.

Mars.—*Analyse ou étude microscopique des différens corps organisés et autres corps de nature diverse, qui peuvent accidentellement se trouver enveloppés dans la pâte translucide des Silex,* par M. TURPIN. Very interesting.——*Recherches anatomiques sur le corps muqueux ou appareil pigmental de la peau, dans l'Indien Charrua, le Nègre et the mulâtre,* par M. FLOURENS.——*Note sur le Rhynchoanète, nouveau genre de Crustacés décapodes,* par M. H. MILNE-EDWARDS.——*Du genre Eligmodonte et de l'Eligmodonte de Buénos-Ayres,* Eligmodontia typus, par M. FRED. CUVIER.——*Rapport sur une note de* M. RANG *concernant le poulpe de l'Argonaute,* par M. de BLAINVILLE.——*Experiences sur la pression à laquelle l'air contenu dans la trachée-artére se trouve soumis pendant l'acte de la phonation,* par M. CAGNIARD-LATOUR.——Rapport sur un mémoire intitule: *De la marche de l'ossification du sternum des oiseaux, pour faire suite aux travaux de* MM. Cuvier *et* Geoffroy Saint-Hilaire, par M. L'HERMINIER.

II.—*Botany.*

Fevrier.—The greater portion of the Number is occupied with a continuation of BRAVAIS' essay, *sur la disposition des feuilles curvisériées.* There are other two original articles—*Histoire de l'Indigo, depuis l'origine des temps historiques jusqú à l'année* 1833, par M. AUG. de SAINT-HILAIRE.——*Précis des observations sur la famille des Hypoxylos,* par M. de A. LIBERT. The Number contains besides a short notice of ESENBECK's well-known Genera Plantarum; and of a large systematic work on the Grasses by KUNTH. An error in the memoir of Jussieu is corrected. It is there stated, that in 1789, among other families, Jussieu established the *Paronychiæ, but* AUG. de SAINT-HILAIRE shews that he was really the author of this, as the former had himself acknowledged.

Mars.—The only original paper is a *Mémoire sur l'accroissement en grosseur des Exogènes,* par M. GIROU de BUZAREINGUES. The other contents are extracts from *Communications sur Java faites à* MM. Wirtgen *et* Nees d'Esenbeck par M. JUNGHUHRE.——Matériaux *pour servir à l'etude des Algues,* par J. N. de SUHR.——*Enumération des plantes decouvertes par les voyageurs dans les îles de la Société, principalement dans celle de Taïti,* par J. B. A. GUILLEMIN.

The American Journal of Science and Arts. Conducted by BENJAMIN SILLIMAN, M. D. Vol. xxxii. No. 2, July 1837. (Continued from page 282.)

On the Economical uses of some Species of Testacea, continued, p. 235.—The species treated of are *Murex.*—The shell purple of the ancients, *M. Tritonis,* Linn.—*Murex,*—affording the dye used by painters.—*Ostrea edulis,*—the history of this shell-fish is imperfect, the writer also considers the European oyster "smaller and thinner, and more rounded than the American, while the lower valve is less concave or vaulted. It is not beaked, and the fish, compared with the size of the shell, is smaller, and it possesses a different flavour, while their habits are so dissimilar, that there can be no doubt of their being distinct species."—*Ostrea scabra.*—*Mya pictorum.*—*Turbo littoreus,* Linn.—*Pecten maximus.*—*P. operularis.*—*P. concentricum.*—*Voluta gravis.*—*Cyprea moneta.*—*Chiton fasciatus,* cooked for the table in the island of Barbadoes.—*Murex despectus.*—*Solen siliqua.*—*Mytilus edulis,* differs from the British species, "in being flatter, not so much ridged, more angular, more extended at the lower end, more polished on the outside, and it seldom grows so large or thick, but it is probably only

a variety."—*Cardium edule.*—*Helix pomatia.*—*Unio.*—*Chama gigas.*—Some additional notes are given of the particular ornamental uses, &c. to which shells are put in various countries. At Mobile the roads are mended with them, (the species so used is not mentioned,) and they are found to answer well. Upon the whole, we have in this paper a useful outline of the economical uses of the Testacea.

Art. VIII. p. 292, *is a favourable review* of Dr Lindley's Natural System of Botany, 2d edit. It is introduced as an original article.——*Description of several new Trilobites*, by JACOB GREEN, M. D. p. 343.——*Description of the Skull of the Guadaloupe Fossil Human Skeleton*, by JAMES MOULTRIE, M. D. Professor of Physiology in the Medical College of the State of South Carolina. The remains alluded to are said to be portions of the Guadaloupe skeleton in the British Museum, and were procured on the spot by Mon. l'Herminiére, and placed in the Literary and Philosophical Society of South Carolina. They consist of five fragments of the skull; and the investigation was made for the purpose of ascertaining, so far as possible, whether these relics belonged, as had been supposed, to an individual of the Carib race. Dr Moultrie considers that they certainly do not, but bear all the marks of the American variety; "In so much, that if it were possible to exfoliate, if I may so say, the fossil relics from their incrustation, the vacancies might be filled with the corresponding parts taken from the head of the Peruvian."——*The Miscellanies* contain the annual report of the Curators of the Boston Society of Natural History, which appears to be increasing rapidly.——Notice of the Discovery of the remains of the Elephas primogenius in 1833 on the Irondiquot creek in the town of Perintow, ten miles east of Rochester, N. Y., and at about the same distance from Lake Ontario.

Magazin de Zoologie, Journal destiné à faciliter aux Zoologistes de tous les pays, les Moyens de publier leur Travaux, et les especes nouvelles ou peu connues qu'ils possedent. Par F. E. GUERIN-MENEVILLE. 8vo. Paris. Septieme année, Livs. 1, 2. (Continued from p. 364.)

Livraison 1, 7*me année.*

1. *Recherches Anatomique et Zoologiques sur les Mammiferes Marsupiaux*, par M. LAURENT, Professeur d'Anatomie. Part of an interesting memoir, proposing to treat, "1. De l'appareil mammaire des Marsupiaux et de la bouche de leur petits.—2. De l'os Marsupial.—3. Du périnée des Marsupiaux—4. De leurs parties sexuelles ou génitales.—The first part is not completed.——2. *Me-*

moire sur les Pachydermes Fossiles connus jusqu'à ce jour, et description du nouveau genre Dinotherium de M. Kaup. par Emile Jacquemin.——3. De Lafresnaye, *description of Mesange a Huppe Jaune, Parus flavo-cristatus.* This bird will not rank among the true *pari.* It has been long known in the British collections, but we believe is till now unfigured. A second new and closely allied species has been lately brought from the Alpine districts of India.——4. *Synopsis Avium ab Alcide D'Orbigny, in ejus per Americam meridionalem itinere, collectorum, et ab ipso viatore necnon a de Lafresnaye in ordine redactarum.* Specific descriptions in Latin are given with the species considered new.——5. *Description de deux especes d'Anodontes Fossiles, precedé de quelques details sur le terrain dans lequel elles se trouvent.* Par M. Charles D'Orbigny, with a plate.——6. *Note monographique sur le genre Limnadie, et description d'une espece nouvelle de ce genre,* par M. F. E. Guerin, with figures of Limnadia, Mauritiana, and Hermannii.——7. *Fulgora Castressii,* a new species described by Guerin, and beautifully figured. It is a native of Mexico.——8. *Calognathus Chevrolatii,* considered as a new species, and now described and figured as such by Guerin.

Livraison 2me. 7 année.

1. Continuation of "*M. Laurent, recherches anatomique et Zoologiques sur les Mammiferes Marsupiaux.*"——2. Continuation of "*Synopsis avium ab* Alcide D'Orbigny."——3. *Notice sur la famille des Engoulevents, (Caprimulgidæ) et les differents genres dont elle se compare,* par M. de Lafresnaye. A useful paper regarding this little investigated group, accompanied with a figure of Egotheles, and the characters of M. Lafresnaye's principal sections. Two great divisions or sections are here proposed; 1*st,* Les Engoulevents humicoles, Caprimulgidæ humicolæ, restricted to the true Goatsuckers, having C. Europeus as Typical. 2*d,* Les Engoulevents prehenseurs, Caprimulgidæ prehensoriæ. Several species are described.——4. *Notice sur deux especes Africanes de Genre amphisbène* (amphisbæna, Linn.) par M. P. Gervais, with a figure.——5. J. Petit de la Saussaye, *description of* "*Helice nemoraline, H. nemoralina, Petit.* A new species from the Island of St Thomas, found at an elevation of 1400—figured.——6. *Description de quelques especes nouvelles de coquilles fossiles de la Champagne,* par M. Michaud.——7. Westwood on *Steira costata, and Luperus nasutus.*——8. *Memoire sur une seconde especes vivante de la famille des Crenoides ou Encrines, servant de type au nouveau genre Holope* (*Holopus*) par

M. Alcide D'Orbigny. The species was discovered at Martinique by M. Rang, and is named by its present describer *H. Rangii*.

Müller's Archiv für Anatomie Physiologie, &c. 1837. Parts 1 and 2. (Contained from Vol. i. p. 587.)

This number contains a Description of Euchytræus, a new genus of Annelida, discovered by Dr Henle of Berlin. These animals are found in situations similar to the common earthworm, generally rolled together in pellets of damp soil, amongst which they are not easily seen until they have been detached by dissolving it in water. They are found in the greatest numbers in the inside of flower-pots, on account of which the generic name Euchytræus (from χυτρος, a vase,) has been bestowed upon them. They will live about fourteen days immersed in water. In length they vary from two to six lines. The head is pointed and conical and the tail truncated. The body is formed of a series of rings, each being barrel-shaped, or swelling out in the centre. The fifth or sixth nearest the head is proportionally longer than the rest. The number of rings varies greatly in individuals of different length. In twelve specimens, they ranged betwen nineteen and sixty-one. They are covered externally by an epidermis, beneath which is a muscular skin formed of longitudinal and transverse filaments. The organs of generation are always situate between the eleventh and twelfth rings, from which it is inferred that the growth of the animal takes place either by the addition of new rings, or by the subdivision of those already existing beyond the twelfth. Only one species belonging to this genus has hitherto been discovered, and from its colour the name *Euchytræus albidus* has been chosen for it. Like the common earthworm it moves by means of minute bristles, four groups of which are attached to each ring, viz. two on the belly, and one on each side. The average number of bristles on each side is three; in the earthworm the average is two, and several other points of difference occur between them. In Euchytræus they are straight and pointed, and they sometimes seem to be attached to each other by a membrane resembling the web of a swimming bird. They take their rise in the inner muscular skin before-mentioned. In the systematic arrangement of the Annelidæ, Euchytræus occupies a place next to Lumbricus, from the similarity of its form, its organs of locomotion, and its internal structure. *Lumbricus rivalis*, described by Fabricius in the Fauna Grœnl. p. 278, seems to approach the nearest to it, but his description is somewhat vague.——*Remarks upon the*

Hybernation of Animals. By Dr A. A. Berthold. Although many reasons have been assigned to account for the sleep of several of the Mammalia during winter, Otto seems to be the first who has attributed it to a peculiar organization of the vessels of the brain, and not merely to a decrease in the temperature of the air. [The result of his latest researches tends to show, that the *carotis cerebralis* in such animals is carried through the aperture of the stapes or stirrup bone.]

Dr Berthold has kept for some time specimens of Myoxus avellanarius, some of which were captured when full grown, and others quite young in the nest. His observations upon them tend to confirm those of Pallas, Spallanzani, &c., and in some instances to correct the statements of other writers on the subject. The animals fell asleep whether they were kept in the open air or in a warm room. Saissy states, that Myoxus glis did not fall asleep until the temperature was below 44° Fahr. Dr Berthold's specimens of M. avellanarius were kept during the winter in a room, the temperature of which was never below 50°, usually from 59° to 63°, and sometimes as high as 68°, and they slept without intermission. Their sleep is more profound in a low than in a high degree of temperature, so that in the former case they may be shaken about for a long time without producing any effect, but in the latter, the shaking causes them to roll themselves up still more firmly, by pressing the head upon the breast, but even then they do not awake. Those kept in a warm room remained longer awake than others in a cold one. In October the latter began to sleep continuously, some, however, awoke every day for some time longer and took some food. Towards the middle of December their sleep became deeper and deeper, and from that time till the middle of March they only awoke two or three times at most. The sleep of those which were kept in a room of ordinary warmth was modified by sudden changes of weather, until it reached the most profound state. When snow or frost was coming on they slept more soundly ; as the weather became milder they were more active, and often awoke for several hours, when they took some food, which they digested completely and then relapsed into sleep. Whenever they awoke under any of these circumstances, their character as nocturnal animals remained constant, as it always happened in the evening or during the night. When old ones, and their young which had not passed a winter, were kept together, the former fell asleep first, as the latter, not yet having attained their full growth, required more food, and their sleep was retarded by the calls of hunger. The temperature of the animals during their sleep

is regulated very much by that of the surrounding air. For instance, when a thermometer placed in the saw-dust which formed their nest indicated 36°, the heat of their bodies was 37°. At other times, the heat of the saw-dust and the animals was respectively,

38° . .	50°	54° . .	53°
60 . .	58	63 . .	63
56 . .	54	58 . .	61

Thus it appears that the temperature of the animals is sometimes higher, and at other times lower, than that of the surrounding medium. In order, however, to prove this more clearly, the nest was placed in the open air at night, when the thermometer stood at 23°, and the respective temperature of the animals and the nest was taken down every half hour. The result showed that the body is more slowly susceptible of change than the saw-dust, but that when the heat of the day is greatest, that of the animal soon surpasses it, and is longer in cooling down again. The heat of different individuals, however, is subject to variation. They are also so constituted, that they remain some degrees above 32° when the external air sinks below that point. In times of extreme cold, unless they are surrounded by a nest of warm materials, death ensues, and the slowness with which their heat is lowered to that of the air is no doubt a provision of nature to provide for their safety in such cases.

The author's view of the question is, that hybernation does not proceed from too great a degree of cold, nor from want of nutriment, (since animals fall asleep though kept in a warm place and supplied with abundance of proper food,) nor yet from the want of power to retain a due supply of heat whilst the temperature of the air is becoming lower; but he regards it as a part of the great system of nature, which exhibits a deficiency of vital energy in every branch of the animal and vegetable world at stated periods. This condition shows itself in some animals when instinct leads them to provide receptacles against the approach of winter, either singly or in societies, then in a state of inactivity, and a desire to sleep, and lastly, in a complete suspension of the action of the nerves, the circulation, the digestive organs, &c. or, in other words, which he calls the condition of "vita minima." This condition is represented amongst the Mammalia which do not hybernate by the shedding of fur, &c.; amongst birds by moulting, and by migrations; by concealment and torpidity amongst the Amphibia and the Invertebrata; and in the vegetable kingdom by the ripening of seeds, the falling of leaves, branches, &c. The same cause will account for the torpidity during summer of the Tanrec of Madagascar, of the crocodile,

and of various serpents in South America; in short, whilst the heat of the sun in tropical climates produces periodically a diminution of vital energy, the absence of that heat in our latitudes produces similar effects, as shown by the torpidity or "vita minima" of the animals under consideration, both being parts of a comprehensive and uniform system pervading every branch of animated nature. ——Continuation of Prof. MITSCHERLICH's Observations on the effects of Oxyde of Copper on the Organization of Animals.—— STANNIUS on the effects of Strychnine on the nervous system. ——REICHART on the Changes which take place in the Viscera in Birds and Mammalia.——GRUBE on the Anatomy of Sipunculus nudus.——Professor WEBER's microscopic observations on the Motion of Lymph in the lymphatic vessels of the Larva of the Frog.

Linnæa,—Ein Journal für die Botanik, &c. Vol. xi. Parts 2 and 3. (Continued from Vol. i. p. 588.)

BUCK on the Cape Plants of the genus Echium.——TRINIUS on a new grass, Zenkeria elegans, a native of the East Indies, allied to Festuca.——Remarks on Lichens by HAMPE.——Description of Echinocactus xanthacanthus, spec. nov.——Revision of the genus Anoda by D. VON SCHLECHTENDAL ——Description of Webera Meyeniana, spec. nov. from Chili, and of Sporledera, genus novum muscorum frondosorum Phascaceorum, by E. HAMPE.——CESATI on the genus Ambrosinia, on monstrous varieties of certain plants, and on some of the Umbelliferæ.——Description of a new species of cane, Canna Altensteinii.——Notaresia, novum genus muscorum, proposed by E. HAMPE, containing three species, N. Capensis, N. Virginica, and N. Italica.

INTELLIGENCE.

ZOOLOGICAL.

Nemertes, Mag. Zool. and Bot. i. p. 529.—Accidentally turning over the "Edinburgh Journal of Natural and Geographical Science" for June 1831, my attention was caught by some observations on Planaria and allied genera by M. Ant. Dugés. From these it is evident that Dugés' genus *Prostoma* is the same as that I have named *Nemertes*. He considers the organ described by me as a stomach to be the mouth; and the groups of points on each side of it he thinks are probably intended to retain the prey on which the worms feed. The ovarian pouches, according to him, open externally along the sides, and are capable of being protruded by compression. These are points which we shall soon, perhaps, have an opportunity of reconsidering when describing some additional species of the genus. It is to be remarked, that all those described by Dugés appear to be natives of fresh water.—G. J.

British Land and Fresh Water Shells found at Mickleham, near Box Hill, Surrey, Summer 1837.

Helix pomatia, abundant in lanes and woods.
——— *fulva*, common on a bank; Juniper Hill Estate.
——— *pura*, found with the preceding.
——— *rupestris*, under stones, &c.
——— *lucida*, in woods, &c. among decayed leaves.
——— *nitens*, common under stones, &c.
——— *alliaria*? do. do.
——— *crystallina*, among decayed leaves.
——— *virgata*,
——— *var.*
——— *ericetorum* } common in pastures, &c.
——— *var.*
——— *arbustorum*, in hedges.

Also the ordinary varieties of *Helix hortensis* and *H. nemoralis* in great plenty.

Carocolla lapicida, abundant in a copse on the Juniper Hill Estate.
Cyclostoma elegans, do. do.

Clausilia biplicata,
——— *laminata,*
——— *var. white,* } in woods and coppices.
——— *rugosa,*
——— *parvula* ?

Pupa marginata, }
—— *umbilicata,* } under stones.

Achatina Acicula, chalky banks, (rare.) I have never found this species in the neighbourhood of London with the animal alive.

Vertigo Juniperi, among moss at the foot of juniper bushes, (not common.)

Bulimus obscurus, }
——— *lubricus,* } in woods, &c. among decayed leaves.

Ancylus fluviatilis, very plentiful, adhering to stones in the river Mole, (fine.)

DANIEL COOPER.

BOTANICAL.

Berkeley's British Fungi.—The third Fasciculus of this important botanical collection is now ready for distribution to subscribers. It is a double number, and contains preserved specimens of one hundred and twenty species.

Fungi under the Tropics.—After some stay at Weltevrede and Samarang, I am now at Djocjokarta (Java,) where I shall probably reside for eight months. This town is situated on a gently sloping plain, about twelve miles in extent, which reaches from the foot of the volcano, named Merapi, to the southern coast of the island; it is at an equal distance from the volcano and the shore. There are here many sandy places, particularly rich in leguminous plants, and the dry beds of the torrents contain an immense quantity of ferns. Calcareous rocks, scattered here and there, rise like towers to the height of almost a hundred feet. Up their steep declivities climbs the Cissus scariosus, *Bl.* whose roots serve as a matrix to the Rafflesia Patma, *Bl.* I have gathered the latter in all its states, and find it still every day. I owe the employment which gives me leisure for my botanical pursuits, to M. Fritze de Nassau, chief physician, who seconds with kindness my zeal for science, and favours to his utmost my study of natural history. I have already made several excursions in the *Sudgebirge,* a low chain of mountains which extends from this place to the south-east point of the island, inhabited by tigers and pea-

cocks, and which is covered by a vegetation of incomparable richness and beauty. Here rise woods of Tectona grandis, which require a whole day to cross; they are met with chiefly in places where the rocks "*de grès*" predominate. At their foot, and under their shade, I found such a great number of beautiful fungi, especially agarics, polypori, pezizæ, clavariæ, and spheriæ, (all quite different from our European species), that the vast hopes which Professor Blume had inspired were much below reality. Among these fungi, I remarked also several very interesting new genera. It appears that under the tropics, the vegetation of plants of this family is not limited, as with you, to certain fixed seasons of the year, for, at this moment, even in the middle of the dry season, I gather a greater number of them than in December, when abundant and continual rains prevail. Consequently these expressions: "when mushrooms predominate, autumn wanes, the leaves fall, and the vegetable kingdom thinks of a new spring," can apply only to what passes in the temperate zone. Indeed, to continue in this figurative style, here the sun is immoveable, the leaves preserve their verdure, the flowers exhale incessantly their delicious perfume, spring and autumn embrace each other; the virginal breath of the young plants is fatal to the old; the power of the fungous vegetation is similar then to these parasites, who, at the conclusion of a sumptuous banquet, on which they have largely fed, go to produce a new offspring. A transient autumn is quickly changed for an eternal summer, whose only clouds are the shades of the forests. The circumstances which principally favour the development of vegetables are found here: the *heat* is constant, and the difference of temperature between the wet and dry seasons is scarcely sensible; and *humidity* never abandons these primitive forests, where the arches of foliage rarely permit a ray of the sun to penetrate. Lastly, the rich and brownish humus of the plain, perpetually impregnated with this moisture, is of that softness which favours the growth of the fungi. The quantity of water raised in vapour by the heat of the day, and which the coolness of the nights deposits again, covers the leaves with a dew so abundant, that in the driest day, one can scarcely go far into one of these woods, without coming out quite soaked. Add to this, the immense quantity of twigs, branches, and even trunks, lying scattered on the ground,—trunks whose interior is already changed to mould, which the bark, so thin that one may easily break it, only preserves in its first form; and you may form to yourself an idea of the external circumstances which favour the uninterrupted development of fungi in the tropical forests, and decks them every

year with such different species, without it being possible to notice that their evolution is confined to any particular season of the year, as, for example, the autumn in the temperate zones. Besides, the same kinds are not limited in their vegetation to a fixed period, but individuals succeed without interruption those which have preceded them. Contrary to what takes place in Europe, where they enliven the forests in autumn, either by their beautiful colours, or by their union in great numbers, fungi here grow more solitary, and group rarely in large masses. It is also the polypori, principally those which grow parasitically on the trunks and branches, and they are almost all different from the European species, which attract us from a distance, and charm us by their lively, brilliant, and varied colours. In Europe it is the agarics, and chiefly the terrestrial kinds, which predominate, and give to its forests in autumn, a peculiar character.—JUNGHUHN *in Ann. des Sciences Nat. Mars* 1837.

Growth of plants inclosed in cases.—Led by the interesting discoveries of Mr Wood, I undertook about two years since, as many experiments on growing plants inclosed in cases, as my ingenuity suggested. In this pursuit I was induced recently to imitate a dripping cave, (the natural habitat of Trichomanes brevisetum, Hygrophila irrigua, &c.) The mode I adopted was as follows, I took a large packing case, glazed in front, fixed a number of inclined shelves to its sides and back, formed a trough at bottom, and a cistern at top having its bottom perforated, with small holes; over these I laid a sand bag to moderate the flow of water supplied each morning. I then planted my ferns, &c. in suitable soil on the inclined shelves, and in the trough ; they were thus exposed to a constant gentle dripping of water, which escaped below, while little if any change of air was effected. The result has been the growth of the ferns in a luxuriance so greatly exceeding my anticipations, that I cannot refrain from recommending the plan to all who are desirous of witnessing the rapid development of these interesting plants in most exquisite verdure.—ROBERT BALL.

MISCELLANEOUS.

Corrections and additions to Report of Meeting of British Association, held at Liverpool 1837.—Mr Macleay expressed the greatest doubt, not only of the deadly effect of the bites of the Argas Persicus, but even of its poisonous nature. These doubts were founded, 1. on the circumstance of the genus Argus not giving a bite,

but only a puncture with its rostrum. 2. On the Argas reflexus, so common in pigeon-houses, being merely a bloodsucker. 3. On the puncture of the Ixodidæ, generally, to which family Argas belongs, producing a mechanical rather than a poisonous irritation, the teeth of the rostrum being directed backwards. 4. On the possibility that persons in a bad habit of body may have given rise to the Persian story, from having suffered under the inflammation consequent on this serrated nostrum being broken off in the wound. 5. On the fact, that two species of Argas, and those of the genus Ixodes, that is, two different genera, were exhibited under the denomination of the poisonous bug of Mianneh ; " so that it would follow, if the collector of these Arachnidæ be correct, that not only Argas is in that district of Persia a poisonous genus, but also *Ixodes*, a well known generic group, troublesome enough in our own and other countries, but never yet considered poisonous. Mr Hope remarked, that he had heard of a poisonous Ixodes in St Domingo ; while Mr Macleay added, that he also knew the St Domingo species, which was common in Cuba ; but that though it often covered the hides of the cattle, tormenting them greatly, it was never considered poisonous, and that Oviedo, an old Spanish writer, who describes them under the name of *Garrapata*, long since held the same opinion.

The eggs of the Ixodes produce a hexapod larva, which is the typical form of the young of the *Acaridea*, which form so vast a portion of the class *Arachnida*.

In reference to Captain Ducane's paper, Mr Macleay made the following remarks, which may be substituted for those at p. 375, (Report of Tuesday, 12th September :) " If Thomson, who professes to have observed the developments of the crabs, and Rathke, who professes to have observed the developments of the crayfish, be both right, it will be a singular fact, that the Brachyurous decapodes undergo metamorphosis, while certain Macrourous decapodes do not undergo it. It was also singular, that if Captain Ducane, who agrees with Thomson as to the metamorphosis of certain macrourous decapod crustacea, and Rathke were both right, then some macrourous decapodes, such as prawns and shrimps, do undergo metamorphosis, and others, such as the crayfish, do not." Mr Macleay has since his return from Liverpool received specimens of the " *Ditch prawn*," (mentioned p. 376,) and found it to be a true prawn or Palemon, the P. varians of Dr Leach, if indeed *that species* can be accurately distinguished.

Botanical Society of Edinburgh, July 13, 1837.—Dr Bal-

four in the chair. Mr J. E. Gray, President of the Botanical Society of London, was elected a *Non-Resident* member. Donations to the library were announced from Mr Sowerby and Mr Leighton.

Mr J. M'Nab read an extract from his Journal of a Tour through Canada and the United States during the summer of 1834, containing a highly interesting account of an excursion to the Falls of Niagara, with particular reference to the botanical features of that celebrated locality. The Arbor vitæ *(Thuja occidentalis)* was observed to be exceedingly abundant in the neighbourhood of the Falls, overhanging the rapids in many places in the most curious manner. Drawings were exhibited of some of these which had sprung up in a very singular way. Several large lime trees had been cut down, many years ago, about two feet above the ground; and, after decay had commenced, some seeds of Arbor vitæ had got into the centre of them, where they had germinated, and now formed beautiful and handsomely shaped trees, upwards of 20 feet in height, with stems 20 inches in circumference. The deciduous trees chiefly consisted of platanus and tulip trees, oaks, elms, limes, ashes, walnuts, beeches, birches, and poplars. The herbaceous vegetation was very luxuriant, and presented many rare and interesting species. The exposed rocky ground above the Falls was richly adorned with dwarf shrubby plants, of which the *Hypericum Kalmianum*, then in full flower, was the most conspicuous, whilst the swampy grounds were profusely covered with the beautiful scarlet and blue cardinal flowers *(Lobelia cardinalis* and *siphilitica.)* *Impatiens biflora* was remarked as the plant growing nearest the descending water of the Falls, being constantly within the influence of the spray, and assuming a tall and spongy habit, without any appearance of flowers. On Goat Island, which separates the American from the British Fall, the herbaceous plants were very various, including *Hepaticas, Trillium, Cypripedium*, &c.; also *Sanguinaria Canadensis, Hedrastis Canadensis, Podophyllum peltatum, Arum triphyllum, Jeffersonia diphylla, Symphira racemosa*, &c. &c.*

Dr Graham stated, that, in consequence of the early, long-continued, and severe winter, a very considerable number of half-hardy shrubby plants in the Botanic Garden had been more or less injured; and that he proposed exhibiting in a tabular form the extent

* Several members of the Society requested Mr M'Nab to publish the Journal of his Tour, and stated their readiness, should he incline to publish it by subscription, to do all in their power to aid him in procuring the requisite number of subscribers.

of the injury,—distinguishing the plants according to their native country, their natural orders, and the situations they occupied in the garden, whether upon walls or in exposed or sheltered borders. He mentioned at the same time, that, in consequence of the much greater quantity of snow than usual, herbaceous plants had sustained little injury, and gave as an example the *Roscoea purpurea*, one of the *Zinziberaceæ*, which had lived in the open border without protection during several winters, and flowered freely each summer.

Specimens of *Cochlearia anglica*, from the "Banks of the Cree, and Palnure Burn, Kirkcudbrightshire," where it was discovered by Dr G. M'Nab, were exhibited. Also specimens of *Festuca arenaria*, so named by Mr Gorrie, brought from the sands of Barry, by Dr Knapp, which were shown by Mr Campbell to be identical with a hairy var. of *Festuca rubra* from North Queensferry.

Several monstrosities were exhibited by Dr Balfour, Mr A. Mack, and Mr Arthur, Walltower Garden, North Berwick.

W. H. Campbell, *Sec.*

Botanical Society of London.—May 4th 1837. W. H. White, Esq. in the Chair.—The ordinary business of the evening having been accomplished, the Secretary proceeded to read a paper from J. Reynolds, Esq. illustrating the singular notions entertained by the ancients, with respect to plants and their uses in the cure of diseases, &c. A communication was then read from Arthur Wallis, Esq. on the Flora of Chelsmford. Mr G. Dennes also read a translation of Professor Meyen's Memoir from the *Annales des Sciences Naturelles* for November 1835, on the Circulation in Vegetables, which excited much interest. The meeting was then adjourned until May 18th.

May 18th 1837.—John E. Gray, Esq. F. R. S., President, in the Chair.—Names of visitors, donations to the library and Herbarium, and candidates' certificates having been read, a memoir was read by M. Hopkins, Esq. on *Vegetable Fermentation*, the subject of saccharine fermentation, and the formation of beet-root sugar, (of which specimens were exhibited,) having been discussed at full length, the President announced the donation of some valuable seeds from the Cape of Good Hope, presented by Monsieur Schmidt to the Herbarium. The Society then adjourned until June 1st.

June 1st.—The President in the Chair.—The names of visitors having been read, and members elected, Mr Hopkins continued his paper on Vegetable Fermentation. Mr Daniel Cooper, the curator, begged to inform the members that the plants in the Herbarium were

nearly arranged, and that the regulations respecting the time of distribution would shortly be announced. The meeting was then adjourned until July 6th.

July 6th.—The President in the Chair.—Donations of plants from Messrs G. Gardiner, G. E. Dennes, Daniel Cooper, Dr Bell Salter, Dr Macreight, &c. having been announced, Mr Hopkins concluded his interesting paper on Vegetable Fermentation. The meeting adjourned until August 3d.

August 3d.—John Reynolds, Esq. Treasurer, in the Chair.—Presents having been announced, Mr G. E. Dennes proceeded to read a translation of the report made to the Academy of Sciences by M. Mirbel, Dutrochet, and Auguste St Hilaire, reporting on the memoir relative to the structure and development of the generating organs of a species of *Marsilea*, found by M. Esprit Fabre, about the environs of Agde. The society then adjourned until September 7th.

September 7th.—J. E. Gray, Esq. F. R. S. President, in the Chair.—Names of visitors having been read, the secretary announced a collection of botanical works for the library, from Mr Pamplin of Wandsworth, and specimens of plants, amounting to upward of 3000, from Daniel Cooper, Esq. the curator; also plants from Mr Dennes and Mr Rich. A communication, accompanied by drawings, from M. Schomburgh, on a supposed new species of Nymphæa, found by him at the River Berbice, British Guiana. This interesting plant is described by M. S. as producing leaves 6 feet in diameter, and flowers upwards of 15 inches across. Upon examination it was discovered to belong to a genus intermediate between Nymphæa and Euryale, to which the name of *Victoria*, in honour of her Majesty, to whom the plants (drawings) had been sent, and received her approbation. The name of *Victoria regalis* has been given to this plant.* M. S. also communicated a new species of *Loranthus*, which he calls *L. Smythii*, in honour of Lady James Carmichael Smyth, a zealous patron of the science. M. S. was unanimously elected a foreign member. The society then adjourned until 3d October.

October 3d.—J. Reynolds, Esq. Treasurer, in the Chair.—Collections of plants were announced from R. Leyland, Esq. of Halifax, C. Conway of Pentywydd, and from Mr Freeman of Stratford, Essex. Mr Freeman then read a paper on the Flora of Stratford, Essex. A continuation of Mr Wallis's former paper was also read, accompanied by a donation of numerous specimens. The secretary

* See Plate in this Number, with extract from M. Schomburgh's letter.

then read some extracts from M. A. Decandolle's Memoir on Alimentary Plants, accompanied by a chart of the world, in which were laid down the boundaries, north and south, as mentioned by Decandolle.

Dr Bossey exhibited specimens of grasses affected with ergot. Mr D. Cooper stated that he had had in the course of the season, much conversation with the Essex farmers, and they informed him that since the increased navigation of steam-vessels in the Thames, their lands had been considerably more productive of late years,—which they attributed to the prevailing winds blowing the smoke and soot over their lands. This point having been fully discussed, the meeting adjourned until November 2d.

November 2d.—Dr Macreight, F. L. S. V. P. in the Chair.—Donations of plants were announced from Mr W. A. Lewis, Mrs Dennison, Mrs Gawler, Mr Hopkins, &c. Dr Bossey then read his paper on the Fungi which he had observed to attack grain. The paper led to an interesting discussion, and the meeting adjourned until November 16th.

Natural History Society of Newcastle.—On Thursday the 21st Sept. the anniversary meeting of the Natural History Society of Northumberland, Durham, and Newcastle upon Tyne, was held in the Society's new building, C. J. Bigge, Esq. the society's treasurer, in the chair. Mr W. Hutton, the senior secretary, read the report of the committee for the past year, which stated that they had to congratulate the members on the continued prosperity of the society. The treasurer's account showed a larger income than ever they had received in one year, and, though there was a balance against the society, the subscriptions which they had yet to receive would do more than cover that amount. They had often had to record the donations made to the society, and it was with pleasure that they now referred to the munificent gift of the Earl of Tankerville (in addition to a handsome annual subscription,) consisting of 500 specimens of corals, corallines, fossils, &c. in a large glass case. This splendid donation imparted quite a new feature to the museum, and the committee thought it their duty to order a new case for the reception of the specimens, in which they can be properly arranged and named, a display which the size of the original case did not admit of, and which, when completed, will form one of the most attractive portions of the museum. It was stated, in the report of last year, that the society expected a present of a series of casts from the fossil bones and shells in the Jardin des Plantes; the committee had to announce that these had arrived, and were very valuable, but

they were not yet arranged, and, for that purpose, the committee had ordered new cases to be made. The part of the society's transactions formerly announced were, from unavoidable causes, not yet ready for publication, and although the committee regretted the delay, yet they had, by it, been enabled to add to the part several local articles of great value. Often as those papers had been praised by others, and pleasing as that praise was to the authors, it would still be a greater pleasure to them to know that a law had been passed at the late meeting of the British Association at Liverpool, by which the authors of those papers were made free members of the council of that association. It also afforded the committee sincere pleasure to think that the efforts of the society, in conjunction with those of the Literary and Philosophical Society, had been crowned with success, and that it had been determined that the next meeting of the British Association was to be held in this town. Such a determination did the highest honour to the town, and, as the Natural History Society had taken an active part in inducing the Association to come to that determination, it would be their duty to do everything in their power for the Association when it came. The committee, therefore, ventured to express a hope that many members of the society would prepare papers to read at that assemblage, by which the society would maintain that credit with the Association which it had already gained, and that, afterwards, if it was found necessary, they would allow those papers to be printed for the benefit of science. The committee also recommended that the next anniversary meeting of the society should be held immediately after the close of the meeting of the British Association, and that some of the most learned members of the Association should be invited to attend the meeting, a circumstance which, the committee conceived, would be highly beneficial to the interests of the society. The committee, in conclusion, had to state that the plan, recommended previously, of admitting the public to the museum, had been acted upon by them; that certain days had been set apart for their admission, and that the museum had occasionally been opened in the evenings. By these means thousands had been gratified with a sight of the museum, and the committee had again the gratification of announcing that they were not aware of any loss or damage sustained in consequence of such unrestricted admission.

Ornithological Society of London.—The four leading peculiarities which distinguish and recommend this society are, *first*, that it furnishes a gratuitous exhibition of birds, which

is open to the view of all classes of the metropolitan public; *second*, that it forms a museum peculiarly adapted for the purposes of science; *third*, that the museum and library are to be always open without restriction to scientific persons and artists; and, *fourth*, that practical advantages are aimed at by the introduction, naturalization, and gratuitous distribution of useful and ornamental foreign birds.

With regard to the first of these points, a very interesting and valuable collection of aquatic birds is now open to the view of all classes in the beautiful garden in St James's Park. The study of natural history is so conducive to our moral and corporeal health, that we rejoice over every institution and project which is intended to diffuse more widely among our fellows that pure happiness which we ourselves are conscious of having derived from this enchanting source. The Horticultural and Zoological Gardens have added greatly to the enjoyment of the inhabitants of the crowded metropolis; but those gardens are generally accessible to none but the higher and more wealthy classes, and gardens of natural history for the poor were a desideratum hitherto unsupplied, until the Ornithological Society stepped forward to supply it. We trust that this benevolent example will be followed, and that we shall live to see the royal parks of London converted into gardens of botany and zoology, sculpture and statuary. Such a conversion might easily be effected without the slightest loss, but, on the contrary, with a most remarkable addition to the beauty and picturesque effect of the parks, and an incalculable improvement, moral and intellectual, of the people.

With regard to the second point, the scientific character of the museum, it is intended to form a complete collection of skeletons and of skins, which, as every ornithologist knows, are far more useful for examination than mounted specimens; to preserve anatomical preparations of parts; to collect eggs, nests, &c. so as to teach (as it were) ornithology by the eye.

Upon the third point, the opening of the museum and library without restriction to scientific persons and artists, it is unnecessary to make any explanation,—the intention is as wise as it is liberal.

The last point, viz. the introduction, naturalization, and distribution of foreign birds, is one of some difficulty, but of exceeding interest and value. With the pheasant in our woods, the turkey and Guinea-fowl in our farm-yards, and the parrot and Canary bird in our cages, it is wonderful that these examples of the advantages of the introduction of foreign birds have not excited us to more en-

terprising and efficient endeavours to introduce the numerous species which might so advantageously be added to our stock of domesticated birds. It is positively disgraceful to this country, that we have no ponds planted with Valisneria, and stocked with the canvass-back duck, that venison of the feathered race. The Curassows are still strangers in the land. The glorious capercailzie has not been recalled from exile; and for cage-birds, why, the very sounds are mockery. Humming birds, and a bird of Paradise, have been brought alive into this country—Here is encouragement for the enterprise of this society! We must not forget to mention, that all the superabundant eggs and birds are to be gratuitously distributed among the members: this will not only act as an inducement to join the society, but is perhaps the very best means that could be devised for diffusing the introduced species throughout all parts of the united kingdom.

Shows are to be instituted, and premiums given; ornithological works are to be published and patronized; and lectures have been already commenced. At the last general meeting on the 7th July, when the ordinary business had been completed, Mr Vigors delivered a masterly and interesting introductory lecture, exhibiting the five types, and aberrations from the types, of ornithological forms, explaining their typical stations, and adaptations to their modes of life. The lectures will be resumed in November.

There are now about two hundred members. The scientific character of the society may be estimated from the following selection from the list: Dr Burchell, the Earl of Derby, J. E. Gray, John Gould, Dr Horsfield, W. S. Macleay, the Bishop of Norwich, Dr Royle, Wm. Swainson, Col. Sykes, N. A. Vigors, and Wm. Yarrell. In addition to the above, Dr Richardson, Mr Selby, and Dr Andrew Smith, have promised their assistance.—H. C.

Obituary.

On the 15th of April 1837, at his residence in Norwich, Joseph Sparshall, Esq. F. L. S., in the 45th year of his age. There is a notice of his character in the Mag. Nat. Hist. for October, p. 559. He was a well-known practical entomologist.

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